JOURNAL
OF THE
ARNOLD ARBORETUM

VOL. XIX JULY, 1938 NUMBER 3

# THE MYRTACEAE OF CHINA

E. D. MERRILL AND L. M. PERRY

SINCE a critical examination of the Chinese species of *Eugenia* Linn. *sensu latiore* has resulted in the recognition not only of *Eugenia* proper, but also of *Syzygium* Gaertner, *Acmena* de Candolle and *Cleistocalyx* Blume, it has seemed desirable to broaden the scope of the work to include all the known Myrtaceae of this geographic unit. The remaining genera are as yet represented by few species either native or cultivated. These are recorded in some part in the various enumerations and reports of floral additions which have appeared from time to time. Very little has been published on the introduced species of *Eucalyptus* and the genus is scarcely represented from China in our herbarium. The same is true for *Myrtus, Melaleuca* and *Eugenia*. *Psidium* is much more widely cultivated and is doubtless naturalized in some places. The other seven genera, *Baeckea, Rhodamnia, Rhodomyrtus, Decaspermum, Acmena, Syzygium* and *Cleistocalyx* are native. *Syzygium* is by far the largest genus and includes several species difficult to limit, yet for its size *Decaspermum* is perhaps the more puzzling unit.

During this study we have had access to the combined oriental collections of the Arnold Arboretum, the Gray Herbarium, the New York Botanical Garden and selected specimens from the United States National Herbarium. In addition to these we are indebted to Sir W. W. Smith, Director, Royal Botanic Garden, Edinburgh, Scotland, for his courtesy in loaning us important collections from Yunnan, and to Professor W. Y. Chun, Sun Yatsen University, for a loan of unicates and duplicates from his undistributed collections.

We are under obligations to the authorities of Harvard University for a grant from the Milton fund that made this study, and the large forthcoming one on the Bornean species, possible.

## KEY TO THE GENERA OF THE CHINESE MYRTACEAE

A. Fruit capsular, dehiscent.

B. The upper part of the flower-bud circumscissile and falling as a lid or an operculum at anthesis .....1. *Eucalyptus*

B. Calyx-lobes and petals separate at anthesis.

C. Flowers sessile, in heads or spikes (at first terminal, later below the leafy shoot grown from the axis); stamens numerous, united in bundles at the base .....2. *Melaleuca*

C. Flowers pedicelled, few in a cluster or solitary, axillary; stamens 10 or fewer, free .....3. *Baeckea*

A. Fruit baccate, indehiscent.

B. Embryo hippocrepiform, curved or sometimes coiled, cotyledons not concealing the hypocotyl; testa hard.

C. Ovary with one locule, the two placentas parietal with many ovules; leaves triple-nerved and veiny .....4. *Rhodamnia*

C. Ovary with 2 to 5 locules; leaves most often pinnately veined (3-ribbed in *Rhodomyrtus*).

D. Locules with false partitions.

E. Ovary with (1–)3 locules, each locule with 2 rows of ovules separated by longitudinal and transverse septa; leaves 3-nerved .....5. *Rhodomyrtus*

E. Ovary with 2 to 5 locules (with or without longitudinal partitions) with one to several ovules in each compartment; leaves pinnately veined .....8. *Decaspermum*

D. Locules without false partitions.

E. Limb of the calyx closed or open at the apex of the bud and tearing ± regularly into lobes at flowering. 6. *Psidium*

E. Calyx with definite lobes.

F. Flowers solitary and axillary; ovary with 2 locules and numerous ovules in each locule .....7. *Myrtus*

F. Inflorescence paniculate with few to many flowers, axillary and sometimes terminal; ovary with 3 to 5 locules (sometimes with false partitions) and one to several ovules in each locule ....8. *Decaspermum*

B. Embryo not hippocrepiform nor coiled, usually ± globose or ellipsoid, cotyledons practically concealing the hypocotyl; testa membranous, cartilaginous, or of a crumbly texture.

C. Embryo apparently undivided or pseudomonocotyledonous.

D. Seed-coat smooth and free from the pericarp; embryo apparently of the same texture throughout; anther-sacs parallel, opening longitudinally .....9. *Eugenia*

D. Seed-coat loosely or closely adhering to the pericarp; embryo much lobed within, the lobes of somewhat different texture

from the outer portion; anther-sacs divaricate, opening by a terminal slit or pore .....10. *Acmena*

C. Embryo divided, i. e. with distinct cotyledons; seed-coat roughish, loosely or closely adhering to the pericarp; anther-sacs parallel, opening longitudinally.

D. Calyx not calyptrate, lobes distinct both in the bud and in the flower .....11. *Syzygium*

D. Calyx calyptrate, i. e. not at all lobed, the entire upper part circumscissile and falling as a more or less indurated lid or calyptra .....12. *Cleistocalyx*

### 1. **Eucalyptus** L'Héritier

An examination of the available Chinese botanical literature revealed only the following specific references to the Australian genus *Eucalyptus*: Lingnaam Agric. Rev. **2**: 66. 1924; Chung, Mem. Sci. Soc. China **1**(1): 184. 1924; Walker, Lingnan Sci. Jour. **6**: 29, 137–145. 1928.

The first reference is an unsigned note (probably editorial) commenting on the successful introduction of the eucalyptus tree on the Lingnan University campus and mentioning in particular the fine specimens of *E. robusta* Smith which have been established long enough to produce a considerable quantity of seeds. Chung in a "Catalogue of Trees and Shrubs of China" lists *Eucalyptus tereticornis* Smith from Kwangtung. Walker, writing a popular article on "Fifty-one Common Ornamental Trees of the Lingnan University Campus," mentions the following species in "a complete genetic list of all the identified trees growing on the campus in the summer of 1926": *E. amygdalina* Labill., *E. citriodora* Hook., *E. corynocalyx* F. Muell., *E. ficifolia* F. Muell., *E. leucoxylon* F. Muell., *E. populifolia* Desf., *E. resinifera* Smith, *E. rudis* Endl., and *E. viminalis* Labill. In addition he gives descriptions of three others, *E. globulus* Labill. (p. 139), *E. robusta* Smith (p. 141), and *E. tereticornis* Smith (p. 143), accompanied by plates drawn from living material.

### 2. **Melaleuca** Linnaeus

**Melaleuca Leucadendron** Linn. Mant. **1**: 105. 1767 (as *Leucadendra*); Benth. Fl. Austral. **3**: 142. 1866; Woodville, Med. Bot. ed. 3, **3**: 544, *t. 195*. 1832; Kurz, For. Fl. Brit. Burma **1**: 472. 1877; Duthie in Hook. f. Fl. Brit. Ind. **2**: 465. 1878; Koord. & Val. Meded. Lands Plant. **40**: 180. 1900 (Bijdr. Boomsoort. Java **6**: 180); King, Jour. As. Soc. Bengal **70**(2): 70. 1901 (Mater. Fl. Malay. Penin. **3**: 500); Guill. Not. Syst. **2**: 101. 1911; Merr. Interpret. Herb. Amboin. 402. 1917, Philip. Jour. Sci. **19**: 368. 1921,

Lingnan Sci. Jour. **9**: 41. 1930, Trans. Amer. Philos. Soc. **24**(2): 286. 1935.

*Myrtus Leucadendra* Linn. in Stickman Herb. Amb. 9. 1754, Amoen. Acad. **4**: 120. 1759, Syst. ed. 10: 1056. 1759, Sp. Pl. ed. 2: 676. 1762.

HONGKONG, *Tsang 187, 3311,* introduced: HAINAN, Heungkong, *Chu Vong May 156,* July, 1928, whether planted or native not indicated. Burma and Indo-China through Malaysia to Australia.

The above cited specimens belong to the glabrous form (var. *Leucadendron* Duthie) of this cultivated and widely distributed species.

### 3. **Baeckea** Linnaeus

**Baeckea frutescens** Linn. Sp. Pl. 358. 1753; Osbeck, Dagbok Ostind. Resa 231, *t. 1.* 1757, Reise Ostind. China 301, *t. 1.* 1765, Voy. China East Ind. **1**: 373, *t. 1.* 1771; Smith, Trans. Linn. Soc. **3**: 260. 1797; Willd. Sp. Pl. **2**: 434. 1799; Poir. Encycl. **7**: 689. 1806; Hooker, Bot. Mag. **55**: *t. 2802.* 1828; DC. Prodr. **2**: 229. 1828; Blume, Mus. Bot. Lugd.-Bat. **1**: 69. 1849; Benth. Jour. Bot. Kew Gard. Misc. **4**: 118. 1852; Miq. Fl. Ind. Bat. **1**(1): 406. 1855, Suppl. 308. 1861; Benth. Fl. Hongk. 118. 1861; Duthie in Hook. f. Fl. Brit. Ind. **2**: 463. 1878; Forbes & Hemsl. Jour. Linn. Soc. Bot. **23**: 295. 1887; King, Jour. As. Soc. Bengal **70**(2): 68. 1901 (Mater. Fl. Malay. Penin. **3**: 498); Valeton, Bull. Dép. Agric. Ind. Néerl. **10**: 39. 1907; Gibbs, Jour. Linn. Soc. Bot. **42**: 75. 1914; Merr. Philip. Jour. Sci. Bot. **10**: 191. 1915 (noting that the genus has no representative in the Philippines); Gagnep. in Lecomte, Fl. Gén. Indo-Chine **2**: 789, *f. 84.* 1920; Merr. Enum. Born. Pl. 436. 1921; Ridley, Fl. Malay Penin. **1**: 712. 1922; Merr. Lingnan Sci. Jour. **5**: 137. 1927; Groff, Lingnan Univ. Sci. Bull. **2**: 77. 1930; Craib, Fl. Siam. Enum. **1**: 624. 1931; McClure, Lingnan Univ. Sci. Bull. **3**: 30. 1931; van Steenis, Bull. Jard. Bot. Buitenzorg III, **12**: 181, *f. 7.* 1932; Merr. Trans. Amer. Philos. Soc. **24**(2): 287. 1935.

*Baeckea chinensis* Gaertn. Fruct. **1**: 157, *t. 31, f. 7.* 1788.
*Cedrela rosmarinus* Lour. Fl. Cochinch. 160. 1790, ed. Willd. 199. 1793.
*Itea rosmarinus* Schult. in Roem. & Schult. Syst. **5**: 408. 1819.
*Baeckea Cumingeana* Schauer in Walp. Rep. **2**: 920. 1843.
*Drosodendron rosmarinus* M. Roem. Syn. **1**: 138, 140. 1846.
*Baeckea cochinchinensis* Blume, Mus. Bot. Lugd.-Bat. **1**: 69. 1849.
*Baeckea sumatrana* Blume, l. c.

KWANGTUNG (locality written only in Chinese), *McClure 279 (C. C. C. 6645)*; Peiyunshan, *Tsiang 2187;* Kochow, *Tsiang 893;* Tai-O,

*Chun 3111;* near Long Tien, *Chun 6102;* Sui Kai, Shing Muk, *Sui Iu Nin 114* (*L. U. 18416*); Teng Woo Mountain, *Levine & Groff 96, Levine 799;* Yunfou District, *Wang 536;* Yung-yun city and vicinity, Wung-yuen District, *Lau 697;* Wong Chuk I and vicinity, *Lau 2188;* Tingushan (Ting Woo Shan), *Liou 861, Lau 20147, Chun 6347;* Canton and vicinity, *Levine 450, Williams s. n.;* Danes Island, *Baird s. n.* 1829: MACAO, *Callery s. n.,* 1844: HONGKONG, *Wright s. n., O. Kuntze 3383, Brigham s. n., Ford s. n.*; Victoria Peak, *Robinson 1579, Pease 20219;* Bok Fu Lum, *Chun 5112;* Wu Kau Tin, *Tsiang 99;* Shatin, Ma Au Shan, *Tsiang 214*; Lantau Island, Taai Ue Shaan, *Tsang 16494*: KWANGSI, banks of the Si Kiang, *Beauvais 189;* between Suan-tze and Nanning, *Ching 7755;* Shap Man Taai Shan, *Tsang 22172, 22460;* Po Yam Shan (along Kwangtung border), *Tsang 22924;* Tong Shan, Waitsap District, *Tsang 22756*: HAINAN, without definite locality, *Henry 8461, Wang 35160;* Pak Shik Ling and vicinity, Ching Mai District, *Lei 958.*

India, southern China, Indo-China, the Malay Peninsula, Anambas and Natoena Islands, Sumatra, Bangka, Borneo and New Guinea (fide Valeton).

### 4. **Rhodamnia** Jack

**Rhodamnia dumetorum** (Poir.) comb. nov.

*Myrtus dumetorum* Poir. Encycl. Suppl. **4**: 52. 1816.
*Myrtus trinervia* Lour. Fl. Cochinch. 312. 1790 (sphalm. *triinervia*), ed. Willd. 381. 1793.
*Nelitris trinervia* Spreng. Syst. **2**: 488. 1825.
*Eugenia ? dumetorum* DC. Prodr. **3**: 284. 1828.
*Rhodamnia siamensis* Craib, Kew Bull. **1926**: 167. 1926, Fl. Siam. Enum. 629. 1931.
*Rhodamnia trinervia* sensu Gagnep. in Lecomte, Fl. Gén. Indo-Chine **2**: 844. 1921, pro parte (fide Craib); Merr. Trans. Amer. Philos. Soc. **24**(2): 283. 1935, non Blume.

INDO-CHINA, Tourane and vicinity, *Clemens 3689;* Phu-quoc, *Pierre;* Me-kong expedition, *Thorel.* Siam.

Although *Rhodamnia trinervia* Blume has been interpreted as an aggregate species, after a careful examination of the readily available material, we have concluded that C. T. White, Blumea, Suppl. **1**: 215. 1937, was right in limiting its distribution to Australia. He pointed out that the Malaysian material differed in mode of inflorescence ("the flowers are pedicellate but amassed in clusters or fascicles, not in pedunculate cymes as in the Australian *R. trinervia* Blume") as well as geographically, but called attention to the fact that *Clemens 3689* (Annam, Indo-China) has the inflorescence-character of the Australian plant and more closely approaches it than any of the other collections

examined. We find the following significant differences: in the Australian specimens, the calyx-lobes are deciduous, the obtusely angled staminate disk is rather prominent in the young fruit, the pubescence on the lower leaf-surface and the calyx-tube is of loose, short, crisp, not closely appressed hairs, and the corolla is practically glabrous; in the Malaysian collections, on the other hand, the calyx-lobes are persistent in fruit, consequently the staminate disk does not appear to be prominent, and the pubescence is appressed both on the lower leaf-surface and on the entire flower-bud; in fact the indument on the lower surface of the leaves is so closely appressed as to be somewhat hoary.

The above cited Indo-Chinese specimens seem to compare favorably with Craib's description of *R. siamensis;* also, there can be no doubt that this is the entity described as *Myrtus trinervia* by Loureiro. Unfortunately his specific name is pre-empted in *Rhodamnia* and it is necessary to adopt the next specific epithet applicable to this species. *Myrtus dumetorum, Nelitris trinervia* and *Eugenia ? dumetorum* were all based on *Myrtus trinervia* Lour.

**Rhodamnia dumetorum,** var. **hainanensis** var. nov.

*Rhodamnia trinervia* sensu Merr. & Chun, Sunyat. **2**: 292. 1935, non Blume.

A forma typica differt foliis brevioribus (usque ad 6.5 cm. longis, 3.5 cm. latis) et ± abrupte acutis, vix acuminatis.

HAINAN, without definite locality, *Wang 33310, 33329, 34031;* Yaichow, *Liang 62235, How 71052* (type in Herb. Arnold Arb.).

Variety *hainanensis* differs from the typical Indo-Chinese material in that the leaves are abruptly acute and shorter in proportion to their width; the inflorescence too may be slightly more compact, varying from a little longer than the petiole to twice its length. Further, it should be noted that *on the same branch* the inflorescences may be in fascicles or clusters of pedicelled flowers on very short shoots (as is predominant in the Malaysian material), or in pedunculate cymes (as in the Australian species).

### 5. **Rhodomyrtus** (DC.) Reichenbach

**Rhodomyrtus tomentosa** (Ait.) Hassk. Flora 1842, Beibl. **2**: 35. 1842; Benth. Jour. Bot. **2**: 220. 1843; Wight, Spicil. Neilgher. **1**: 60, *t. 71.* 1845; Miq. Anal. Bot. Ind. **1**: 16. 1850; A. Gray, Bot. Wilkes U. S. Expl. Exped. **1**: 546. 1854; Miq. Fl. Ind. Bat. **1**(1): 477. 1855; Benth. Fl. Hongk. 121. 1861; Miq. Choix Pl. Jard. Buitenz. *t. 3.* 1863; Beddome, Fl. Sylv. Anal. Gen. cvi. *t. 14, f. 3.* 1872; Duthie in Hook. f. Fl. Brit. Ind. **2**: 469. 1878; Vidal, Phan. Cuming.

Philip. 112. 1885, Rev. Pl. Vasc. Filip. 129. 1886; Forbes & Hemsl. Jour. Linn. Soc. Bot. **23**: 295. 1887 (Ind. Fl. Sin. **1**: 295); Niedenzu in Engler & Prantl, Nat. Pflanzenfam. **3**(7): 70, *f. 37*. 1893; Henry, Trans. As. Soc. Japan **24**(Suppl.): 43. 1896 (List Pl. Formos. 43); Matsum. Tokyo Bot. Mag. **12**: 68. 1898; Ito & Matsum. Jour. Col. Sci. Imp. Univ. Tokyo **12**: 479. 1899 (Tent. Fl. Lutch. 479); Koord. & Val. Meded. Lands Plant. **40**: 41. 1900 (Bijdr. Boomsoort. Java **6**: 41); King, Jour. As. Soc. Bengal **70**(2): 75. 1901 (Mater. Fl. Malay. Penin. **3**: 505); Matsum. & Hayata, Enum. Pl. Formos. 142. 1906; Holtermann, Einfl. Klimas, *t. 9, f. 46*. 1907; Merr. Philip. Jour. Sci. Bot. **3**: 423. 1908; C. B. Rob. op. cit. **4**: 337. 1909; Hayata, Ic. Pl. Formos. **2**: 18. 1912; Gibbs, Jour. Linn. Soc. Bot. **42**: 76. 1914; Fyson, Fl. Nilgiri & Pulney Hill-tops **1**: 150. 1915, **2**: *t. 108*. 1915; Kanehira, Formos. Trees 258. 1917; Crevost & Lemarié, Cat. Prod. Indochine **1**: 251. 1917; Gagnep. in Lecomte, Fl. Gén. Indo-Chine **2**: 794, *f. 85*. 1920; Merr. Enum. Born. Pl. 425. 1921; Ridl. Fl. Malay Penin. **1**: 717. 1922; Merr. Enum. Philip. Pl. **3**: 156. 1923; Chung, Mem. Sci. Soc. China **1**(1): 183. 1924; Merr. Lingnan Sci. Jour. **5**: 136. 1927; Groff, Lingnan Univ. Sci. Bull. **2**: 76. 1930; Craib, Fl. Siam. Enum. **1**: 628. 1931; McClure, Lingnan Univ. Sci. Bull. **3**: 29. 1931; van Steenis, Bull. Jard. Bot. Buitenz. III, **12**: 167. 1932; Merr. Trans. Amer. Philos. Soc. **24**(2): 283. 1935.

*Myrtus tomentosa* Ait. Hort. Kew, ed. 1, **2**: 159. 1789, ed. 2, **3**: 189. 1811; Vahl, Symb. Bot. **2**: 56. 1791, **3**: 65. 1794; Curtis, Bot. Mag. **7**: *t. 250*. 1794; Blume, Bijdr. 1081. 1826; DC. Prodr. **3**: 240. 1828; Roxb. Fl. Ind. ed. 2, **2**: 498. 1832; Hook. & Arn. Bot. Beechey's Voy. 187. 1833; Wight & Arn. Prodr. **1**: 328. 1834; Wight, Ill. **2**: 12, *t. 97*, f. 3*. 1841, Ic. **2**: *t. 522*. 1843; Korth. Nederl. Kruidk. Arch. **1**: 197. 1847.

*Myrtus canescens* Lour. Fl. Cochinch. 311. 1790, ed. Willd. 381. 1793.

FUKIEN, Foochow, *Chung 7393, Carles s. n.*, 1897; Nantai, *Lin Yu Tai 11978;* Kushan Monastery, *Tang 5833;* Minhow Hsien, *Chung 2313;* Amoy Island, Nanputo Hill, *Chung 1691;* Inghok, Fang-Quang-Yen, *Chun 7722*: KIANGSI, Hsin-Feng Hsien, *Hu 985*: KWANGTUNG, Shaan Nim, *McClure 156* (*C. C. C. 7132*); Tai Mo Shan, Tapu District, *Tsang 21288;* Lok Chong, *Tso 20993;* Tsing Wan Shan, Wong Chuk I and vicinity, Wung Yuen District, *Lau 2212;* Yang Shan and vicinity, south of Linchow, Yang Shan District, *Tsui 541, 612;* Kochow, Sintong, Tai-tseh-wei, *Tsiang 2099;* (Teng Woo Mountain) Ting Woo Shan, Kwai Leng, Kao-Yao District, *Lau 20295, Levine 732;* Canton, *Levine 784, 1151, 3017, Tsiang 5, 391*: MACAO and adjacent Islands, *Vachell s. n.*: HONGKONG, *Chun 6570, Ford s. n., Liou 7393, Sargent s. n.*,

*Wright s. n.;* Tai-O, *Chun 4878;* Lantau Island, Taai Ue Shaan, *Tsiang 16668*: KWANGSI, Mekon, Seh-feng, Dar Shan, south of Nanning, *Ching 8451;* North I-Shan, *Ching 5217;* Tou Ngok Shan, Waitsap District, *Tsang 23187;* Po Yam Shan, Sun-to District, *Tsang 23079;* Shap Man Taai Shan, southeast of Shang-sze, Shang-sze District, *Tsang 22246*: HAINAN, without definite locality, *Henry 8020, 8491, Liang 64124, 65288, 66277, Wang 32849, 36615;* Mi ting, *McClure 7745;* Seven Finger Mountain, *Liang 61654;* Yaichow, *Chun & Tso 44624, Liang 61948, 63066;* Dung Ka, *Chun & Tso 43596;* Fo De, *Gressitt 724;* Tai Tin Shan, Ch'ang-kiang District, *Lau 1261;* Lin Fa Shan, Lam Ko District, *Tsang 13* (*L. U. 16762*), *271* (*L. U. 15770*); Pak Shik Ling and vicinity, Ching Mai District, *Lei 531, 747.* Type from China. India southward through Malaysia to Australia.

*Rhodomyrtus parviflora* Alston is the only segregate we have found which might raise some question concerning the synonymy as given above. Alston merely indicates, "Species *R. tomentosae* Wight affinis, sed floribus parvis, breviter pedicellatis differt. — Typus: *Thwaites* C. P. 1591." We have not seen the type, but in our Ceylon collections (of which we have only four), although the pedicels are somewhat shorter, the flower-buds are fully as large as in some of the other material represented. Further when specimens show only immature buds or flowers it is very difficult to estimate the value of the characters above designated.

### 6. **Psidium** Linnaeus

A. Young branchlets quadrangular; leaves oblong to elliptic, with rounded or obtuse base, finely pubescent beneath ..... 1. *P. Guajava*

A. Young branchlets cylindric or compressed; leaves obovate-elliptic, cuneate at the base, glabrous ..... 2. *P. littorale*

1. **Psidium Guajava** Linn. Sp. Pl. 470. 1753; Miq. Fl. Ind. Bat. **1**(1): 469. 1855; Benth. Fl. Hongk. 120. 1861; Kurz, For. Fl. Brit. Burma **1**: 476. 1877; Duthie in Hook. f. Fl. Brit. Ind. **2**: 468. 1878; Koord. & Val. Meded. Lands Plant. **40**: 35. 1900 (Bijdr. Boomsoort. Java **6**: 35); Léveillé, Fl. Kouy-Tchéou 289. 1914; Merr. Interpret. Herb. Amboin. 391. 1917; Gagnep. in Lecomte, Fl. Gén. Indo-Chine **2**: 848. 1921; Chung, Mem. Sci. Soc. China **1**(1): 183. 1924; Merr. Lingnan Sci. Jour. **5**: 135. 1927; Walker, Lingnan Sci. Jour. **6**: 29. 1928; Merr. Univ. Calif. Publ. Bot. **15**: 215. 1929; McClure, Lingnan Univ. Sci. Bull. **3**: 29. 1931; Handel-Mazzetti, Symbol. Sin. **3**(7): 596. 1933; Merr. Trans. Amer. Philos. Soc. **24**(2): 283. 1935.

*Psidium pomiferum* Linn. Sp. Pl. ed. 2: 672. 1762; Lour. Fl. Cochinch. 310. 1790, ed. Willd. 379. 1793; DC. Prodr. **3**: 234. 1828; Hook. & Arn. Bot. Beechey's Voy. 188. 1833.

*Psidium pyriferum* Linn. Sp. Pl. ed. 2: 672. 1762; Lour. Fl. Cochinch. 309. 1790, ed. Willd. 378. 1793; DC. Prodr. **3**: 233. 1828.

Specimens seen from Szechuan, Fukien, Kwangtung, Kwangsi, Yunnan and Hainan. The common guava: a plant of American origin widely cultivated and naturalized in the Old World tropics.

2. **Psidium littorale** Raddi, Opusc. Sci. **4**: 254, *t. 7, f. 2.* 1820.

*Psidium Cattleianum* Sabine, Trans. Hort. Soc. London **4**: 317, *t. 11.* 1821; Lindl. Coll. Bot. *t. 16.* 1821, Bot. Reg. **8**: *t. 622.* 1822; Sims, Bot. Mag. **51**: *t. 2501.* 1824; DC. Prodr. **3**: 236. 1828; Popenoe, Man. Trop. Subtrop. Fruits 279, *f. 36.* 1920; Fawc. & Rendle, Fl. Jamaica **5**(3): 318. 1926.

*Psidium variabile* Berg, Mart. Fl. Bras. **14**(1): 400. 1857.

KWANGTUNG, Heungshan, *Chun 99*: HAINAN, Nodoa, *McClure 2547 (C. C. C. 8992)*.

When *Psidium Cattleianum* was originally named the species was thought to be native to China, but Lindley, Bot. Reg. **10**: 1824, in "Notes" at the end of the volume indicated that this was an error adding "Reason now exists for supposing it to be a native of some part of South America." It is now known to be a native of Brazil. According to Popenoe it was carried to China at an early period, presumably by the Portuguese, and from China it was carried to Europe. It is cultivated in various subtropical regions.

In checking the synonymy of *Psidium Cattleianum* Sabine, the name by which this species is best known, we found that *Psidium littorale* Raddi is apparently the earlier specific epithet. The fascicle in which the description and plate of the latter appears was published separately in 1820, although the date of publication usually is cited as 1823. This is the date of the title-page of volume 4 complete, but when fascicle-covers are in the volume, these are to be regarded as indicating the actual date of publication rather than the title-page. We have not been so fortunate as to find any record of the publication of Sabine's name before the year 1821.

### 7. **Myrtus** Linnaeus

**Myrtus communis** Linn. Sp. Pl. **1**: 471. 1753; Gaertner, Fruct. **1**: 184, *t. 38.* 1788; Le Maout & Decaisne, Traité Gén. Bot. 293. 1868; Baillon, Hist. Pl. **6**: 305, 306. 1877; Niedenzu in Engler & Prantl, Nat. Pflanzenfam. **3**(7): 67, *f. 35.* 1893; Gard. Chron. III, **45**: 18. 1909; Bailey, Stand. Cycl. Hort. 2096. 1916, Man. Cult. Pl. 535. 1924.

FUKIEN, Kulangsu Island, Amoy (cultivated), *Chung 1629*.

A native of the Mediterranean region and western Asia, widely cultivated in favorable climates for ornamental purposes.

## 8. **Decaspermum** J. R. & G. Forster

A cursory examination of the genus *Decaspermum* J. R. & G. Forst. shows the species to be highly variable and, perhaps on account of the polygamous flowers, somewhat more difficult than representatives of the other genera here considered. Possibly not more than five species are represented in our collections from China; yet, apart from the very distinct *D. hainanense* and *D. albociliatum*, the species are not easily defined. The following key and summary give the species as we understand them at present.

A. Calyx-lobes ovate, obtuse to acute or slightly acuminate.
  B. Inflorescence terminal and in the uppermost leaf-axils only; the young branchlets and leaves as well as the inflorescence tomentose. 1. *D. hainanense*
  B. Inflorescence axillary and terminal; the young branchlets, the young leaves and the inflorescence appressed-pubescent or glabrous.
    C. Plant glabrous; calyx and corolla mostly 4-merous. 2. *D. cambodianum*
    C. Branchlets, young leaves and inflorescence ± appressed-pubescent; calyx and corolla 3-merous or 5-merous.
      D. Calyx and corolla 5-merous .....3. *D. fruticosum*
      D. Calyx and corolla 3-merous .....4. *D. gracilentum*
A. Calyx-lobes linear to linear-lanceolate, elongate-acuminate. 5. *D. albociliatum*

1. **Decaspermum hainanense** (Merr.) Merr. Lingnan Sci. Jour. **14**: 42. 1935.

*Eugenia hainanensis* Merr. Philip. Jour. Sci. **23**: 255. 1923, Lingnan Sci. Jour. **5**: 136. 1927.

HAINAN, without definite locality, *Wang 33701, 34183, 34210, 34679;* Yik Tsok Mau, *McClure 9734;* Yaichow, *Chun & Tso 44739, Liang 62442, How 70687, How 71123;* on the way to Seven Finger Mountain, *Liang 61624;* Po-ting, Lingshui, *How 73499; Ko 52207;* Po T'eng Shi (BoDeng), Ling Shui (Ling-tui) District, *McClure 20044;* Yeung Ling Shan, Ngai District, *Lau 194*.

This species differs from all the other species of *Decaspermum* in China in the larger flowers, the predominantly terminal inflorescence, and the crisp or short tomentose pubescence of the younger parts.

2. **Decaspermum cambodianum** Gagnep. Bull. Mus. Hist. Nat. Paris **26**: 73. 1920 et in Lecomte, Fl. Gén. Indo-Chine **2**: 846, *f. 91.* 1921; Craib, Fl. Siam. Enum. **1**: 630. 1931; Merr. & Chun, Sunyat. **2**: 291. 1935.

*Eugenia multipunctata* Merr. Jour. Arnold Arb. **6**: 138. 1925, Lingnan Sci. Jour. **5**: 136. 1927.

*Eugenia ciliaris* Ridley, Kew Bull. **1928**: 74. 1928 (fide Craib).

HAINAN, without definite locality, *Liang 63765, 64946, Wang 35948;* between Dung Ka and Wen Fa Shi, *Chun & Tso 43770;* Dung Ka, *Chun & Tso 43872, 43911;* Mo San Leng, *Chun & Tso 44287;* Chim Fung Ling, Kan-en District, *Lau 3720, 3792;* Five Finger Mountains, *Chun 1567, 2034.* Indo-China and the Malay Peninsula.

In most of the collections of this species the leaves tend to be broader above the middle, with a short obtuse acumen and a more or less attenuate-acute base. *Chun 2034,* the type of *Eugenia multipunctata* Merr. is wholly in agreement with this and apparently the name already has been correctly reduced to the synonymy of *D. cambodianum.* It should be noted, however, that the flowers are mostly 3-merous. *Chun 1567* is aberrant in having the leaves distinctly acuminate with a short obtuse base; the flowers also are 3-merous; in fact except for the lack of pubescence this collection more nearly resembles *D. gracilentum* (Hance).

3. **Decaspermum fruticosum** J. R. & G. Forster, Char. Gen. 74. *t. 37.* 1776, Beschreib. Gattung. Pflanz. Reise Ins. Süd-See 77, *t. 8, f. 37.* 1779; Rehder, Jour. Arnold Arb. **15**: 109. 1934.

*Eugenia Esquirolii* Léveillé, in Fedde, Rep. Spec. Nov. **9**: 459. 1911, Fl. Kouy-Tchéou 289. 1914.

*Pirus Bodinieri* Léveillé, Fl. Kouy-Tchéou 350. 1915.

KWEICHOW, heights of Lao-ten, *Esquirol 82;* road between Lo-hou and Tong-tcheou, *Esquirol 3611*: KWANGTUNG, Yang Shan and vicinity, south of Linchow, *Tsui 581*: KWANGSI, Loh Hoh Tsuen, Ling Yün Hsien, *Steward & Cheo 530;* Seh-Feng, Dar Shan, S. Nanning, *Ching 7853, 8098;* Tang Giar Poo, southeast of Luchen, *Ching 5225, 5246*: YUNNAN, Szemao, *Henry 11753, 11753A, 11753B, 11753C;* between Szemao and Puerhfu, *Rock 2832;* between Muang Hing and Szemao and the Szemao hills proper, *Rock 2789;* without definite locality (Plants of E. Tibet and S. W. China), *Forrest 27408.* India to Yunnan, Kweichow and Kwangtung south through Malaysia to Polynesia. A variable and difficult species, possibly an aggregate, frequently called *D. paniculatum* Lindl. which may or may not be specifically distinct.

4. **Decaspermum gracilentum** (Hance) comb. nov.

*Eugenia gracilenta* Hance, Jour. Bot. **23**: 7. 1885; Forbes & Hemsl. Jour. Linn. Soc. Bot. **23**: 296. 1887.

*Syzygium gracilentum* Hu, Jour. Arnold Arb. **5**: 232. 1924.

*Decaspermum fruticosum* sensu Merr. Lingnan Sci. Jour. **5**: 137. 1927; Merr. & Chun, Sunyat. **1**: 74. 1930; Chun, Sunyat. **1**: 289. 1934, non J. R. & G. Forst.

KWANGTUNG, Tai-tseh-wei, Sintong, Kochow, *Tsiang 2087;* Peiyunshan, Kochow, *Tsiang 2186;* near Kying-tung, Sunyi, *Tsiang 2654*: HAINAN, without definite locality, *Wang 32843, 34370, 35415;* Ngai Chau and vicinity, Ngai District, *Lau 5;* Tung Koo Shan and vicinity, Wen Ch'ang District, *Fung 20349*; I Kap Shan and vicinity, Tan District, *Lau 1174;* Hung Mo Shan and vicinity, Lai (Loi) area, *Tsang, Tang & Fung 59* (*L. U. 17590*); Pak Shik Ling and vicinity, Ching Mai District, *Lei 255, 558*; Ka Chik Shan and vicinity, Ch'ang-Kiang District, *Lau 1388;* Ue Lung Shan, *Lau 3177*; Chim Fung Ling, Kan-en District, *Lau 3548;* Lin Fa Shan, Lam Ko District, *Tsang 2* (*L. U. 16751*), *273* (*L. U. 15772*); near Po-ting, Lingshui, *Liang 61564;* Po-ting, *How 71605, 71638;* between Po-ting and Seven Finger Mountain, Lingshui, *Liang 61527*; Seven Finger Mountain, *Liang 61651;* Chim Shan, Fan Maan Ts'uen and vicinity, *Fung 20141*; Five Finger Mountain, *McClure 8628*; Tungkap, Tingan, *Ko 52288*; Tai Pin, *Gressitt 1110;* Fan Yah, *Chun & Tso 44089;* Yaichow, *Liang 62087, 63023, How 70464, 70465*; enroute Ta Hon to Nga Wan, *McClure 9247;* Nar-Fai-Lee, *Ford 433.* Formosa.

In the southeastern part of China, most of the collections recently referred to *D. fruticosum* J. R. & G. Forst. are characterized by 3-merous flowers a little smaller than in Forster's species and by the capsules with fewer (3–5) seeds. The specimens correspond in all details to the description of *Eugenia gracilenta* Hance although in Hance's description the number of parts of the outer floral circles is not mentioned. Dr. W. R. Philipson at the British Museum has very kindly examined Hance's type for us and has assured us the calyx and the corolla are 3-parted. The fairly well marked geographical range and the constancy of the trimerous flowers has led us to believe that these collections are to be regarded as representing a definite entity; hence, we separate them from *D. fruticosum* J. R. & G. Forst. and reestablish Hance's species in the genus *Decaspermum*.

5. **Decaspermum albociliatum** sp. nov.

Frutex circiter 4 m. altus, ramis teretibus, gracilibus, glabratis, ramulis perspicue molliter ac longe albido-ciliatis, ultimis gracillimis, vix 0.5 mm.

diametro; foliis lanceolatis vel oblongo-lanceolatis, 3–6 cm. longis, 1–2.5 cm. latis, chartaceis vel subcoriaceis, graciliter subcaudato-acuminatis, basi late obtusis vel subrotundatis, utrinque minute puncticulatis, junioribus utrinque perspicue longe albido-ciliatis, pilis plus minusve persistentibus, venis primariis utrinque 8–10, obscuris, interdum obsoletis vel subobsoletis; petiolo 1–2 mm. longo, piloso; floribus axillaribus, solitariis, pedicellis calycibusque perspicue longe ac molliter albido-ciliatis, pedicellis sub anthesi 3–4 mm. longis, sub fructu paullo longioribus, bracteolis linearibus, albido-ciliatis, 5–7 mm. longis, sepalis linearibus vel lineari-lanceolatis, elongato-acuminatis, albido-pilosis, 4–5 mm. longis; fructibus subglobosis, circiter 5 mm. diametro, albido-ciliatis, circiter 6-locularibus.

HAINAN, Po-ting, *F. C. How 73044* (type in herb. Arnold Arb.), *73736*, July 1 and September 26, 1935, in forests, altitude 250–360 m.

This form with conspicuous long, soft, white indumentum on the branchlets, leaves, pedicels and flowers and its slenderly acuminate leaves manifestly belongs in the group with *Decaspermum fruticosum* Forst. In both specimens cited the flowers are axillary and strictly solitary. Striking differential characters, as compared with *D. fruticosum* Forst., are its slender, elongated, linear bracteoles and the elongated, linear or linear-lanceolate, pilose sepals.

In addition to the above we have one collection from Hainan, Yeung Ling Shan, Ngai District, *Lau 206*, with only staminate flowers. The specimens have short axillary and terminal inflorescences and leaves similar to *D. cambodianum* Gagnep., but the younger parts and the flowers are pubescent. Although we cannot match the specimens, we think it unwise to propose a new species in this critical group without additional material.

### 9. **Eugenia** Linnaeus

We have, for reasons indicated elsewhere,[1] accepted *Syzygium* Gaertner (including *Jambosa* de Candolle) as the proper generic name for most of the Old World species that have been placed in *Eugenia*, restricting *Eugenia* to that large group characteristic of tropical America but with some representatives in the Old World tropics. *Eugenia*, as thus restricted, has no representatives in China except for a single introduced one of Brazilian origin; and this species is the type- or standard-species of the genus.

**Eugenia uniflora** Linn. Sp. Pl. **1**: 470. 1753; Miq. Fl. Ind. Bat. **1**(1):

[1] Jour. Arnold Arb. 19: 99. 1938.

440. 1855; Duthie in Hook. f. Fl. Brit. Ind. **2**: 505. 1879; Urb. Bot. Jahrb. **19**: 620. 1895; Turrill, Bot. Mag. **141**: *t. 8599*. 1915; Craib, Fl. Siam. Enum. **1**: 665. 1931; Alston in Trimen, Handb. Fl. Ceyl. **6**(Suppl.): 119. 1931.

*Myrtus brasiliana* Linn. Sp. Pl. **1**: 471. 1753.

*Plinia rubra* Linn. Mant. **2**: 243. 1771; Vellozo, Fl. Flum. **5**: *t. 46*. 1827.

*Plinia pedunculata* Linn. f. Suppl. 253. 1781; Curtis, Bot. Mag. **14**: *t. 473*. 1800.

*Eugenia Michelii* Lam. Encycl. **3**: 203. 1789; DC. Prodr. **3**: 263. 1828; Trimen, Handb. Fl. Ceyl. **2**: 188. 1894; Koord. & Val. Meded. Lands Plant. **40**: 160. 1900 (Bijdr. Boomsoort. Java **6**: 160).

*Stenocalyx Michelii* Berg in Mart. Fl. Bras. **14**(1): 337, 628. 1857.

KWANGTUNG, cultivated, *Chun* (*S. Y. U. 4066*).

A native of South America of early introduction into the orient. It is now widely planted for ornamental purposes and for its edible fruits, and in some regions is naturalized or semi-naturalized.

## 10. **Acmena** de Candolle[1]

*Acmena*, as first limited by de Candolle (1828) comprised one Australian species. Wight (1841), lacking authentic material for comparison, misinterpreted the genus indicating several Asiatic species as part of *Acmena* which he placed in a subgenus of *Eugenia*. This concept of *Acmena* apparently replaced the original one, and in 1861 a Chinese species, *Acmena Championii* Benth. Fl. Hongk. 119, was described. This is really a *Syzygium*. Only two other species have been attributed to China, *Acmena? chinensis* Planch. Hort. Donat. 84. 1854–58 and *A. acuminatissima* (Blume) Merr. & Perry. As regards the first, the description was based on specimens cultivated in Europe and there is no direct evidence that this cultivated plant came from China. We have been unable to discover its identity, cf. Jour. Arnold Arb. **19**: 19. 1938. The singular structure of the fruits of *A. acuminatissima* prompted us to consider the generic status of this genus. Although, as in *Syzygium*, the naked embryo falls out of the opened pericarp, its structure differs greatly. Here the cotyledons are not at all easily separated, in fact appearing as one, and within is a much lobed organ of different texture (for fuller discussion cf. Jour. Arnold Arb. **19**: 6). A close scrutiny of the anthers shows the sacs divaricate and opening by a terminal slit or pore. In the other genera of this closely related complex the anther-sacs are parallel and open longitudinally.

[1] **Merrill, E. D. and L. M. Perry.** A synopsis of Acmena DC., a valid genus of the Myrtaceae, Jour. Arnold Arb. 19: 1-20. 1938. A genus of eleven known species chiefly of Malaysia and Australia but with one species widely ranging from Burma and southern China through Malaysia to Australia and the Solomon Islands.

**Acmena acuminatissima** (Blume) Merr. & Perry, Jour. Arnold Arb. **19**: 12. 1938.

*Myrtus acuminatissima* Blume, Bijdr. 1088. 1826.
*Syzygium acuminatissimum* DC. Prodr. **3**: 261. 1828.
*Jambosa acuminatissima* Hassk. Cat. Hort. Bogor. Alt. 262. 1844; Miq. Fl. Ind. Bat. **1**(1): 438. 1855.
*Syzygium subdecurrens* Miq. Fl. Ind. Bat. **1**(1): 449. 1855.
*Eugenia acuminatissima* Kurz, Rep. Pegu, App. A. lxiii. 1875; For. Fl. Brit. Burma **1**: 487. 1877; Duthie in Hook. f. Fl. Brit. Ind. **2**: 483. 1878; Forbes & Hemsl. Jour. Linn. Soc. Bot. **23**: 296. 1887; Koord. & Val. Meded. Lands Plant. **40**: 155. 1900 (Bijdr. Boomsoort. Java **6**: 155); King, Jour. As. Soc. Bengal **70**(*2*): 126. 1901 (Mater. Fl. Malay. Penin. **3**: 556); Dunn & Tutcher, Kew Bull. Add. Ser. **10**: 105. 1912; Koord. & Val. Atlas Baumart. Java **3**: *f. 506*. 1915; Ridley, Fl. Malay Penin. **1**: 747. 1922; Chung, Mem. Sci. Soc. China **1**(1): 184. 1924; non Miquel (1847), nec Berg (1857–59).
*Eugenia Cumingiana* Vidal, Phan. Cuming. Philip. 173. 1885; Craib, Fl. Siam. Enum. **1**: 636. 1931.
*Eugenia saligna* sensu C. B. Rob. Philip. Jour. Sci. Bot. **4**: 392. 1909; Merr. Lingnan Sci. Jour. **5**: 137. 1927; non *Jambosa saligna* Miq.
*Eugenia subdecurrens* Merr. & Chun, Sunyat. **2**: 289. 1935.

KWANGTUNG, Shi-wan-da-shan, *Tso 23424*; Ting Wu Shan, *Tsiang 1530, 1565, Chun 6379, Liang 60316*; Sunyi District, *Wang 31838*: HONGKONG, *Ford 21* (Herb. Kew, phot.): KWANGSI, Seh-feng, Dar Shan, South Nanning, *Ching 8266*: HAINAN, without definite locality, *Liang 63367, 63371, 63438, 63692, 64736, 65256, 65331, Wang 33232, 34486;* Yaichow, *Liang 62212, 63277, How 70354;* Po-ting, *How 73046, 73405*; Five Finger Mountain, *McClure 2141* (*C. C. C. 8682*); Ka Chik Shan and vicinity, Ch'ang-kiang District, *Lau 2910*; Ue Lung Shan, *Lau 3165;* Lin Fa Shan, Lam Ko District, *Tsang 381* (*L. U. 15880*). Burma and Siam southward and eastward to the Philippines and the Solomon Islands.

## 11. **Syzygium** Gaertner

A study of the Chinese species of *Eugenia* was undertaken as a preliminary to the larger, more complex and more difficult task of revising the Bornean species of the same group.

*Eugenia* is a Linnean genus; nevertheless, it was a vague entity until the time of de Candolle. This distinguished scientist, previous to the publication of the Myrtaceae in the Prodromus, wrote an informal summary of the family, Dict. Class. Hist. Nat. **11**: 399–407. 1827 (preprint, 1826). In this he made a distinct effort to associate closely related genera and to untangle the confusion caused by certain generic concepts. *Eugenia* in particular was set forth with its salient characters. Less

than a quarter of a century later, Wight (1841), unable to maintain de Candolle's concept, re-defined the genus on a much broader basis including therein *Acmena* de Candolle, *Syzygium* Gaertner, *Jambosa* de Candolle and *Caryophyllus* Linnaeus. Thus there were established two contrasting generic ideas, *Eugenia* Linn. *sensu stricto* and *Eugenia* Linn. *sensu latiore,* neither of which has wholly dominated the other. In view of this situation, any study of the genus necessarily involves a consideration of its extent. *Eugenia* in the strict sense stands primarily as limited by de Candolle, although it must be noted that the significant generic characters stressed by him have fallen into disuse and obscurity. *Eugenia* in its broader sense is a heterogeneous assemblage of material. As already indicated in our article on the Indo-Chinese species of *Syzygium* Gaertner, Jour. Arnold Arb. **19**: 99. 1938, we have departed from the broader interpretation of *Eugenia,* not on account of the growing tendency of present-day botanists to use *Syzygium,* but rather owing to the conclusions reached through study of the structure of the fruits. In practically all the fruits of *Syzygium* which we opened, the naked embryo (consisting of two distinct cotyledons with the hypocotyl mostly concealed within) fell out and the seed-coat remained more or less loosely attached to the inside of the pericarp. In contrast, the opened fruits of *Eugenia* proper disclosed not the naked embryo but the seed with a usually lustrous and membranous or possibly cartilaginous seed-coat. Furthermore the embryo is pseudomonocotyledonous. These differences in the fruits we regard as the basic distinctions between the two genera. There are some differences in the inflorescences. Those of *Syzygium* are chiefly cymose-paniculate, whereas, in *Eugenia* they are largely of clustered one-flowered pedicels (or peduncles). The calyx limb is very short in the latter and the stamens are much less incurving in the bud. A more detailed discussion of the history and characters of these two genera is given in our forthcoming paper on the Bornean species of *Eugenia.*

In taking account of all the species of China which have hitherto been accepted as *Eugenia* Linn. *sensu latiore,* it is necessary to call attention to two other genera, *Acmena* de Candolle and *Cleistocalyx* Blume. Summaries of both of these have been published in the Journal of the Arnold Arboretum, **18**: 322–343, *t. 25.* 1937 and **19**: 1–20. 1938, and of course the Chinese species appear again in this paper.

To summarize briefly, the Chinese species of *Eugenia* Linn. *sensu latiore* are here treated as belonging to *Eugenia* Linn., *Syzygium* Gaertner, *Acmena* de Candolle and *Cleistocalyx* Blume. *Eugenia* is limited to one introduced species of American origin. *Acmena* is represented by

a single indigenous species and *Cleistocalyx* by two. All other known Chinese species of the group, whether native or introduced, fall into the genus *Syzygium* which, as we interpret it, also includes *Jambosa* de Candolle.

Of the forty-five species of *Syzygium* as we recognize its occurrence in China, twenty-six are known as yet only from that country, the others are either introduced and cultivated or are already reported from Indo-China and India (Burma). Twenty have been found in Hainan alone and nine of these are not yet recorded from elsewhere in China.

The literature is rather scant and fairly well scattered, and, as already indicated, since Bentham's Flora Hongkongensis was issued in 1861, all treatments appear under *Eugenia* Linn. The only summary of the genus for all China is that of Forbes & Hemsley, Jour. Linn. Soc. **23**: 296–298. 1887. Here fourteen species are listed with synonymy and citations of collections. Since then regional plant lists, such as Groff, Ding and Groff, Lingnaam Agric. Review **2**(2): 119, 120. 1924 and Merr. Lingnan Sci. Jour. **5**: 136, 137. 1927, have been helpful in bringing the summary of species, often described singly, up to date. The only key to the species of the genus in China is that of Dunn & Tutcher, Kew Bull. Add. Ser. **10**: 104, 105. 1912 (Flora of Kwangtung and Hongkong), in which nine species are contrasted. This, perhaps adequate for its purpose at the time, is now of little value when one attempts to identify material in this group since in this paper we record no less than nineteen species from Kwangtung, more than twice the number Dunn & Tutcher knew to occur in that Province.

Our treatment of the group is not in any way intended as final but rather aims to furnish a synopsis of all the species hitherto reported and to provide, we hope, a usable key for identifying assembled collections and currently collected material. Unfortunately, apart from a small group or two, we have been unable to find sectional differences for the great majority of species, hence, we are obliged to use gross and vegetative characters for our key. Gagnepain, Bull. Soc. Bot. France **64**: 94–103. 1917, discussed the characters of *"Eugenia"* in great detail as foundation for his treatment of the genus in Lecomte, Fl. Gén. Indo-Chine **2**: 796–844. 1920, 1921. As a whole this is helpful, although not entirely in keeping with our experience as regards either the petals or the orientation of the embryo.

Our study of the embryo has been somewhat handicapped by the complication of polyembryony and the irregularity of the cotyledons resulting from this, the immaturity of many of the fruits at hand, the paucity in the number of fruits and their entire lack in some species.

However, it may be helpful briefly to summarize what we have observed. Five species, *S. Jambos* (L.) Alston, *S. buxifolium* Hook. & Arn., *S. latilimbum* (Merr.), *S. Forrestii* Merr. & Perry and *S. Hancei* Merr. & Perry, are ordinarily polyembryonic. The cotyledons vary in size, the hypocotyls being short. In eight species, *S. zeylanicum* DC., *S. tetragonum* Walp., *S. tephrodes* (Hance), *S. Tsoongii* (Merr.), *S. rysopodum*, *S. stenocladum* and *S. Chunianum* (the last three herein described as new) the inner faces of the cotyledons are interlocking and the hypocotyl is long. *Syzygium Championii* (Benth.) and *S. claviflorum* Wall. have cotyledons adhering more closely than in the other species but clearly separable with the inner faces distinct. The remaining species represented by fruits in the collections available to us have cotyledons with flat or concave inner faces. In *S. Levinei* (Merr.), *S. myrsinifolium* (Hance), *S. balsameum* Walp., *S. euonymifolium* (Metc.), *S. fluviatile* (Hemsl.), *S. Bullockii* (Hance), *S. kwangtungense* (Merr.) and *S. Grijsii* (Hance), the hypocotyl is very short but visible at the side of the embryo, appearing as a circular piece holding the cotyledons together. In *S. Cumini* (L.) Skeels, *S. szemaoense* Merr. & Perry, *S. salwinense*, *S. brachythyrsum* and *S. brachyantherum* (the last three herein described as new) the point of attachment and the hypocotyl are concealed between the two cotyledons.

All the material examined is cited in this article. In 1930 the senior author critically examined Hance's types also those of Hooker and Arnott, and Bentham, and made carbon imprints of the leaves which have been most helpful in showing both the actual size and the plan of the venation.

### Key to the Chinese Species of Syzygium

A. Flowers large, apex of the bud at anthesis at least 8 mm. in diameter; calyx-lobes persistent, conspicuous, 3 mm. or more high.

B. Inflorescence lateral, i. e., on the branches below the leaves.

1. *S. malaccense*

B. Inflorescence axillary and terminal.

C. Leaves lance-oblong to elliptic, rounded or slightly cordate at the base.

D. Flower-buds 2.5–3.5 cm. high; apex of the calyx-tube about 1.5 cm. in diameter, tube not obviously glandular.

2. *S. latilimbum*

D. Flower-buds 1.5–2 cm. high; apex of the calyx-tube 0.8–0.9 cm. in diameter, the tube copiously dotted with minute glands ..... 3. *S. samarangense*

C. Leaves elliptic to narrowly lanceolate, tapering at the base (slightly cordate or rounded in *S. Jambos* var. *sylvaticum*).

D. Petioles 5–8 mm. long; leaves gradually acuminate at the apex; anthers elliptic, 1–1.5 mm. long.

E. Leaves narrowly lanceolate, 6–13 cm. long, 1.5–2 cm. broad; fruit with 3–4 seeds .....4. *S. polypetaloideum*

E. Leaves lanceolate, 10–25 cm. long, 2.5–5 cm. broad; fruit with 1(–3) seed(s) .....5. *S. Jambos*

D. Petioles 8–16 mm. long; leaves obtusish or somewhat abruptly acuminate at the apex; anthers elliptic, 0.6–1 mm. long.

E. Inflorescence open, ultimate branchlets ± 1 cm. long; leaves ± obscurely pellucid-punctate, submarginal vein manifest, secondary one ± obscure.
6. *S. brachyantherum*

E. Inflorescence somewhat crowded, ultimate branchlets about 4 mm. long; leaves obviously pellucid-punctate, submarginal veins conspicuous, secondary one manifest.
7. *S. imitans*

A. Flowers small or slender, apex of the bud at anthesis not exceeding 5 mm. in diameter; calyx, if lobed, with caducous lobes (sometimes only tardily so in fruit) inconspicuous, not more than 2 mm. high.

B. Flower-buds slenderly clavate, not glaucous, at least 9 mm. long; calyx-tube gradually attenuate to the base or narrowed into a very short pseudostipe.

C. Branchlets tetragonous.

D. Leaves oblong-ovate, subcordate at the base; inflorescence chiefly terminal; rachis scarcely 1 cm. long.
8. *S. Boisianum*

D. Leaves elliptic to elliptic-lanceolate, tapering at the base; inflorescence terminal and axillary, rachis up to 2 cm. long.
9. *S. Championii*

C. Branchlets subcompressed, sometimes obscurely tetragonous.

D. Cymes few-flowered, axillary and terminal; calyx-tube narrowed into a short pseudostipe, longitudinally wrinkled or slightly sulcate.

E. Calyx slightly sulcate and copiously glandular; primary veins strongly ascending (from midrib at angle of about 45°); bark of the branchlets grayish-white.
10. *S. stenocladum*

E. Wrinkles of the calyx somewhat obscuring the minute glands; veins spreading-ascending (at approximately 60°); bark of the branchlets fuscous. 11. *S. rysopodum*

D. Cymes usually in dense fascicles, axillary and terminal or in the axils of fallen leaves: calyx-tube gradually attenuate to the base, not obviously wrinkled or sulcate.

E. Leaves large, 10–20 cm. long, 4–9 cm. broad, thick-coriaceous; upper surface minutely punctate; submarginal vein 2 mm. or more from the margin; secondary veins inconspicuous .....12. *S. claviflorum*

E. Leaves smaller, 4–13 cm. long, 2–4.5 cm. broad, coriaceous; both surfaces abundantly but minutely punctate; submarginal vein usually less than 1.5 mm. from the margin; secondary veins tending to be almost as prominent as the primary ones, giving the impression of closer venation than in *S. claviflorum* Wall.
13. *S. leptanthum*

B. Flower-buds various, usually not slenderly clavate (or if clavate, also glaucous) and rarely more than 9 mm. long.

C. Calyx longitudinally wrinkled and more or less glaucous or pruinose when dry; fruit, where known, white or whitish.

D. Branchlets tetragonous, the angles strongly margined or slightly winged.

E. Petioles 7–10 mm. long; leaves elliptic; ultimate branches of the inflorescence very short (2–1 mm. or less), usually bearing several (5 or more) flowers at the apex.
14. *S. Rockii*

E. Petioles 1–3 mm. long; leaves not elliptic; ultimate branches of the inflorescence short, usually bearing 3 (1–5) flowers at the apex.

F. Leaves ovate to ovate-lanceolate, subcordate at the base .....15. *S. tephrodes*

F. Leaves narrowly oblong, acute at the base.
16. *S. Tsoongii*

D. Branchlets slightly compressed or terete.

E. Acumen not more than half as long as the remainder of the blade; branchlets slender.

F. Leaves ovate, scarcely punctate above, only occasionally glandular-punctate beneath; primary veins spreading; secondary venation mostly obscure; calyx chiefly verrucose .....17. *S. zeylanicum*

F. Leaves lanceolate to lance-ovate, minutely punctate above, glandular-punctate beneath; primary veins ascending-spreading; secondary venation almost as prominent as the primary; calyx not verrucose.
18. *S. odoratum*

E. Acumen very slender and about as long as the remainder of the blade; branchlets very slender, thread-like.
19. *S. araiocladum*

C. Calyx not longitudinally wrinkled nor glaucous; fruit variously colored, not white.

D. Rachis and branches of the inflorescence minutely papillate.

E. Leaves slenderly oblong with narrow obtuse apices.
20. *S. myrsinifolium*

E. Leaves elliptic to ovate-elliptic with the acumen ± 1 cm. long .....21. *S. Levinei*

D. Rachis and branches of the inflorescence glabrous.
E. Inflorescence usually lateral in the axils of old or fallen leaves (sometimes appearing terminal), below the new leafy shoots.
F. Leaves large, up to 23 cm. long; primary veins ± 10 mm. apart.
G. Inflorescence apparently terminal or subterminal (on last year's shoots); flower-bud 2–2.5 mm. high, obconical .....22. *S. yunnanense*
G. Inflorescence lateral (occasionally terminal); flower-bud 4–6 mm. high, globose or depressed-globose at the apex, abruptly narrowed into a stalk-like base.
H. Leaves coriaceous; flower-bud with a thick pseudostipe; branchlets brownish.
I. Branchlets definitely winged; leaves drying olive-green .....23. *S. Nienkui*
I. Branchlets obscurely 4-angled or only slightly compressed; leaves drying reddish-brown .....24. *S. tetragonum*
H. Leaves chartaceous; flower-bud with a slender clavate pseudostipe; branchlets olive-green becoming whitish .....25. *S. balsameum*
F. Leaves, if large, closely veined; primary veins ± 5 mm. apart; secondary veins almost as prominent.
G. Inflorescence open and elongated, 3–7(–12) cm. long; flowers sessile.
H. Flower-bud obovoid or subglobose at apex, tapering to a pseudostipe; leaves mostly elliptic to oblong-elliptic.
I. Inflorescence lateral; calyx obscurely lobed. 26. *S. Cumini*
I. Inflorescence axillary and terminal; calyx-lobes definite, about 2 mm. high. 27. *S. Augustinii*
H. Flower-bud obconical; leaves lanceolate to slenderly elliptic .....28. *S. fruticosum*
G. Inflorescence mostly compact and short, scarcely more than 2 cm. high; flowers pedicelled. 42. *S. euonymifolium*
E. Inflorescence axillary and terminal.
F. Branchlets tetragonous.
G. Angles of the branchlets definitely winged; inflorescence chiefly lateral; flower-bud globose at apex and abruptly contracted into pseudostipe toward base; primary veins 6–12 mm. apart. 23. *S. Nienkui*

G. Angles of the branchlets often strongly margined; inflorescence axillary and terminal; flower-bud gradually tapering to the base, or if abruptly contracted, with calyx-lobes 2 mm. high; primary veins of the leaves 1–5 mm. apart (6–12 mm. in *S. cathayense*).

H. Flower-buds with obvious calyx-lobes, abruptly contracted into a stalk-like base; submarginal vein(s) (usually two) 2–4 mm. within the margin .....29. *S. cathayense*

H. Flower-buds with inconspicuous calyx-lobes, gradually tapering to the base; submarginal vein scarcely 1 mm. within the margin.

I. Leaves lanceolate, 4.5–10 cm. long; primary veins strongly ascending.

30. *S. sterrophyllum*

I. Leaves not lanceolate, or if so, not more than 5 cm. long; primary veins spreading-ascending.

J. Flowers pedicelled; branches of the inflorescence usually ascending.

K. Leaves rounded to acutish at the apex, 1–5 cm. long; primary veins 10–21 on each side of the midrib, 1.5–3 mm. apart.

L. Leaves subcoriaceous with relatively large pellucid pustulations; submarginal vein obvious; primary veins 16–21, obvious .....31. *S. Handelii*

L. Leaves subcoriaceous to coriaceous with minute or obsolete pustulations; primary veins 10–14, more or less obscure.

M. Leaves often verticillate, occasionally opposite and alternate, 1–3 cm. long, about 1/3 as broad ....32. *S. Grijsii*

M. Leaves chiefly opposite, if as short as in *S. Grijsii*, usually somewhat rounded.

33. *S. buxifolium*

K. Leaves acuminate at the apex, 4–7 cm. long; primary veins 16–23 on either side of midrib, 2–3 mm. apart.

*S. buxifolium* var. *austrosinense*

J. Flowers sessile; branches of the inflorescence often strongly divaricate.

K. Flowers and leaves appearing together (inflorescence apparently leafy); upper surface of leaves with midrib, primary and submarginal veins impressed, punctate. 34. *S. salwinense*

K. Flowers appearing after leaves; upper surface of leaves with only the midrib impressed, obscurely punctate .....35. *S. szemaoense*

F. Branchlets terete or slightly compressed to sulcate, occasionally obscurely tetragonous.

G. Leaves large, with very open venation, primary veins ± 10 mm. apart.

H. Inflorescence chiefly terminal; flower-bud obconical, 2–2.5 mm. high; branchlets whitish. 22. *S. yunnanense*

H. Inflorescence occasionally terminal; flower-bud turbinate with thickish pseudostipe, 3–4 mm. high; branchlets brownish. 24. *S. tetragonum*

G. Leaves smaller with primary veins rarely more than 5 mm. apart.

H. Leaves with rounded subcordate base, practically sessile .....36. *S. Bullockii*

H. Leaves tapering to petiolar base or petiole.

I. Secondary venation almost as prominent as the primary (leaves closely veined).

J. Inflorescence 3–10 cm. high, flowers usually clustered at the tips of the branches.

K. Flower-buds 5–6 mm. high, subglobose at the apex or obovoid and narrowed into a pseudostipe.

L. Petiole 7–10 mm. long; calyx-lobes about 2 mm. high. 27. *S. Augustinii*

L. Petiole 15–20 mm. long; calyx-lobes about 0.5 mm. high. 37. *S. Forrestii*

K. Flower-buds 2.5–3 mm. high, obconical, without pseudostipe. 28. *S. fruticosum*

J. Inflorescence 1–4 cm. high, flowers usually single at tips of the branches, or,

if apparently in triads, one sessile and two pedicellate.

K. Inflorescence scarcely more than 1 cm. high with branches 1–1.5 mm. long; flower-bud 5 mm. long, 3.5–4 mm. in diameter at apex; calyx-lobes about 1 mm. long.
38. *S. brachythyrsum*

K. Inflorescence 2–4 cm. high, usually with secondary branches; flowers 3 mm. long, apex 2 mm. in diameter; calyx-lobes scarcely 0.5 mm. long .....39. *S. Chunianum*

I. Secondary venation not at all prominent.

J. Leaves linear-oblong, rounded at the apex; flowers pedicellate.
40. *S. fluviatile*

J. Leaves not linear-oblong; flowers pedicellate or sessile.

K. Flowers obviously pedicellate.

L. Bark brownish; venation of the leaves ± obscure; inflorescence chiefly terminal or in the upper axils; flower-buds about 5 mm. long ....41. *S. kwangtungense*

L. Bark greyish-white; venation of the leaves evident; inflorescence chiefly axillary or lateral in the axils of fallen leaves; flower-buds about 3 mm. long.
42. *S. euonymifolium*

K. Flowers very short-pedicellate or sessile.

L. Inflorescence 2–4 cm. high, fairly open; secondary venation of the leaves often obvious.
39. *S. Chunianum*

L. Inflorescence usually not more than 2 cm. high, fairly compact.

M. Primary veins parallel, somewhat transverse; calyx-lobes at least 1 mm. long.
38. *S. brachythyrsum*

M. Primary veins oblique; calyx-lobes 0.5 mm. or less long.

N. Flower-bud scarcely more

than 2 mm. high, usually angled; stamens very short (± 1 mm. long). 43. *S. Hancei*

N. Flower-bud 2.5–4 mm. long, scarcely, if at all, angled; stamens 2–3 mm. long.

O. Leaves roundish-elliptic, abruptly contracted into a short (3–5 mm. long) obtuse acumen; inflorescence terminal; branchlets sulcate . . . . 44. *S. Howii*

O. Leaves elliptic, usually not so abruptly acuminate (acumen ± 10 mm. long); inflorescence axillary and terminal; branchlets compressed. 45. *S. Rehderianum*

**1. Syzygium malaccense** (Linn.) comb. nov.

*Eugenia malaccensis* Linn. Sp. Pl. 470. 1753; Kurz, For. Fl. Brit. Burma **1**: 493. 1877; Duthie in Hook. f. Fl. Brit. Ind. **2**: 471. 1878; Forbes & Hemsl. Jour. Linn. Soc. Bot. **23**: 297. 1887; Hemsl. Jour. Linn. Soc. Bot. **30**: 177. 1894; Koord. & Val. Meded. Lands Plant. **40**: 55. 1900 (Bijdr. Boomsoort. Java **6**: 55); King, Jour. As. Soc. Bengal **70**(2): 82. 1901 (Mater. Fl. Malay. Penin. **3**: 512); Merr. Philip. Jour. Sci. Bot. **9**: 121. 1914; Koord. & Val. Atlas Baumart. Java **3**: *f. 445*. 1914; Merr. Herb. Amboin. 398. 1917; Gagnep. in Lecomte, Fl. Gén. Indo-Chine **2**: 839. 1921; Ridl. Fl. Malay Penin. **1**: 724. 1922; Craib, Fl. Siam. Enum. **1**: 651. 1931; Kanehira, Bot. Mag. Tokyo **45**: 334. 1931, Jour. Dept. Agric. Kyushu Univ. **4**: 380. 1935.

*Eugenia macrophylla* Lam. Encycl. **3**: 196. 1789.

*Jambosa malaccensis* DC. Prodr. **3**: 286. 1828; Hook. & Arn. Bot. Beechey's Voy. 188. 1833; Wight & Arn. Prodr. **1**: 332. 1834; Hook. Bot. Mag. **74**: *t. 4408*. 1848; Wight, Ill. **2**: *t. 98*. 1841; Diels, Bot. Jahrb. **56**: 532. 1921.

*Jambosa purpurascens* DC. Prodr. **3**: 286. 1828, quoad syn. Roxb.

*Eugenia purpurea* Roxb. Fl. Ind. ed. 2, **2**: 483. 1832; Wight, Ic. **2**: *t. 549*. 1843.

*Eugenia malaccensis* Linn. var. *purpurea* Duthie in Hook. f. Fl. Brit. Ind. **2**: 472. 1878.

*Jambosa domestica* Blume, Mus. Bot. Lugd.-Bat. **1**: 91. 1849.

*Caryophyllus malaccensis* W. F. Wight ex Safford, Contr. U. S. Nat. Herb. **9**: 217. 1905.

Reported from southern China by Hooker and Arnott and also by Forbes and Hemsley, on the basis of specimens collected during Beechey's Voyage; these would have been from an introduced and cultivated tree, probably at Macao. Native of some part of the Indo-Malaysian region, now more or less pantropic in cultivation; we have seen no Chinese material that is referable to this strongly characterized species.

2. **Syzygium latilimbum** (Merr.) comb. nov.

*Eugenia latilimba* Merr. Lingnan Sci. Jour. **13**: 64. 1934.

HAINAN, *Wang 33965;* Yaichow, *How 70575, 71075,* April 23, July 21, 1933, in woods by stream; Po-ting, Ling Shui, *Ko 52169;* Chim Shan, Fan Maan Ts'uen, *McClure 20098* (type in Herb. New York Bot. Gard.), May 4–20, 1932.

*Syzygium latilimbum* is readily separated from the other Chinese species of this group by the oblong-elliptic leaves which are rounded or slightly cordate at the base, and by its very large flowers.

In addition to the above cited material we have a collection from Yunnan, Szemao, *Henry 11945,* which appears to be a close relative. Its leaves are scarcely more than half as wide, gradually acuminate and more obviously glandular-punctate. Although this collection does not match any species represented in the material at hand, it is too fragmentary to characterize as a distinct species without supplementary specimens.

3. **Syzygium samarangense** (Blume) Merr. & Perry, Jour. Arnold Arb. **19**: 115. 1938.

*Myrtus samarangensis* Blume, Bijdr. 1084. 1826.

*Jambosa samarangensis* DC. Prodr. **3**: 286. 1828.

*Eugenia javanica* Lam. Encycl. **3**: 200. 1789; Kurz, Jour. As. Soc. Bengal **46**(2): 69. 1877, For. Fl. Brit. Burma **1**: 494. 1877; Duthie in Hook. f. Fl. Brit. Ind. **2**: 474. 1878; King, Jour. As. Soc. Bengal **70**(2): 81. 1901 (Mater. Fl. Malay. Penin. **3**: 511); Merr. Philip. Jour. Sci. Bot. **9**: 120. 1914, Interpret. Rumph. Herb. Amboin. 395: 1917; Gagnep. in Lecomte, Fl. Gén. Indo-Chine **2**: 837. 1921; Ridley, Fl. Malay Penin. **1**: 726. 1922; Guillaumin, Jour. Arnold Arb. **12**: 255. 1931; Kanehira, Bot. Mag. Tokyo **45**: 334. 1931; Craib, Fl. Siam. Enum. **1**: 647. 1931; Merr. Lingnan Sci. Jour. **13**: 41. 1934; non *Syzygium javanicum* Miq.

KWANGTUNG, *Tong 98* (*S. Y. U. 6209*); Honam Island, *Lau 4* (*L. U. 18405*); Heungshan, *Chun 98*. An introduced and planted species here. Native of Malaysia, widely distributed in the Old World tropics.

Unfortunately the currently used specific name *javanica* is preoccupied

in *Syzygium, S. javanicum* Miq. (1855) being a totally different species based on a Javan specimen collected by Horsfield.

4. **Syzygium polypetaloideum** sp. nov.

Arbor parva, 3–5 m. alta; ramulis novellis paulum subcompressis, ferrugineis; foliis lineari-lanceolatis, 6–13 cm. longis, 1.5–2 cm. latis, utrinque angustatis, subcoriaceis, pellucido-punctatis, venis primariis utrinque 10–19, supra obscuris, subtus prominulis, secus marginem in venam submarginalem confluentibus, venulis laxe reticulatis; petiolo 5–7 mm. longo; inflorescentiis terminalibus, 6–8 cm. longis, paucifloris, ramis paucis, ± 2 cm. longis; floribus magnis, alabastris obovoideis, circiter 15 mm. longis, apice 10–12 mm. latis; calycis lobis 4, circiter 5 mm. longis, semi-orbicularibus, petalis 4, liberis, staminibus elongatis, antheris elliptico-oblongis, 1 mm. longis; fructibus subglobosis, circiter 1.7 cm. latis, seminibus 3–4.

KWANGSI, Bako Shan, W. Poseh, *Ching 7637*, September 24, 1928, by open stream side, 600 m. alt.: YUNNAN, Red River bank, *Beauvais 826*, Maupan, *Henry 10716, 10716A* (type in Herb. Arnold Arb.).

This species superficially resembles *Eugenia polypetala* Wight. It differs in having opposite leaves with primary veins less remote and more divergent, terminal inflorescence and corolla of only four petals.

5. **Syzygium Jambos** (L.) Alston in Trimen, Fl. Ceyl. 6(Suppl.): 115. 1931; Merr. & Perry, Jour. Arnold Arb. **19**: 114. 1938.

*Eugenia Jambos* L. Sp. Pl. 470. 1753; Lour. Fl. Cochinch. 307. 1790, ed. Willd. 375. 1793; Willd. Sp. Pl. **2**: 959. 1800; Roxb. Fl. Ind. ed. 2, **2**: 494. 1832; Wight, Ill. **2**: 14. 1841; Kurz, Jour. As. Soc. Bengal **46**(2): 69. 1877, For. Fl. Brit. Burma **1**: 495. 1877; Duthie in Hook. f. Fl. Brit. Ind. **2**: 474. 1878; Forbes & Hemsl. Jour. Linn. Soc. Bot. **23**: 297. 1887; King, Jour. As. Soc. Bengal **70**(2): 82. 1901 (Mater. Fl. Malay. Penin. **3**: 512); Dunn & Tutcher, Kew Bull. Add. Ser. **10**: 104. 1912; Merr. Herb. Amboin. 397. 1917; Gagnep. in Lecomte, Fl. Gén. Indo-Chine **2**: 834. 1921; Ridley, Fl. Malay Penin. **1**: 724. 1922; Merr. Lingnan Sci. Jour. **5**: 136. 1927; Walker, Lingnan Sci. Jour. **6**: 133. 1928; Craib, Fl. Siam. Enum. **1**: 647. 1931; Merr. Trans. Amer. Philos. Soc. **24**(2): 285. 1935.

*E. malaccensis* sensu Lour. Fl. Cochinch. 306. 1790, ed. Willd. 374. 1793, non Linn.

*Myrtus Jambos* HBK. Nov. Gen. Sp. Pl. **6**: 144. 1823.

*Jambosa vulgaris* DC. Prodr. **3**: 286. 1828; Hook. & Arn. Bot. Beechey's Voy. 188. 1833; Wight & Arn. Prodr. **1**: 332. 1834; Hook. Bot. Mag. **61**: *t. 3356*. 1834; Wight, Ic. **2**: *t. 435*. 1843; Benth. Fl. Hongk. 120. 1861.

*Jambosa Jambos* Millsp. Field Columb. Mus. Bot. **2**: 80. 1900.

FUKIEN, Changchow, White Cloud Hill, *Chung 1148;* Foochow City,

*Chung 2381, 2697*: KWANGTUNG, without locality, *Chun 6132, 9785, 40188, Hu* (*S. Y. U. 20794*), *Lau 223, Liang 61872, Ng 101, Tso 20088, Wang 30496*; Ying-Tak, *Liang 60549*; Yeung-kong, *Wang 38818*; Honam Island, *Levine 357, 427;* Lofoushan, *Chun 40510;* Canton, White Cloud Hill, *Tso 20007;* vicinity of Canton, *Levine 627, 3217*: HONGKONG, *Wright s. n., Bodinier s. n., Chun 5610, 5144, Wang 32392, Gibbs* (*Hb. Hongkong 7440*), *Tsiang 356*: YUNNAN, *Tsiang 12647* (*S. Y. U. 73450*): HAINAN, *Wang 36437, Liang 64518;* south of Fan Ta, *McClure 9156;* Pak Shik Ling and vicinity, Ching Mai District, *Lei 308;* Hung Mo Shan and vicinity, Lai, *Tsang & Fung 414* (*L. U. 17948*); Na Lin Shan, Taam Chau District, *Tsang 152* (*L. U. 16901*); Sha Po Shan, *Tsang 431* (*L. U. 17180*); Chim Shan, Fan Maan Ts'uen, Ling Shui District, *McClure 20129*.

Many of the Hainan collections are reported as from trees growing near streams.

**Syzygium Jambos** var. **sylvaticum** (Gagnep.) Merr. & Perry, Jour. Arnold Arb. **19**: 114. 1938.

*Eugenia Jambos* L., var. *sylvatica* Gagnep. in Lecomte, Fl. Gén. Indo-Chine **2**: 835. 1921.

KWANGTUNG, *Ng 101,* in part (*S. Y. U. 27508, 67794*).

Unfortunately, since the label is written in Chinese characters, we do not know in what locality the specimens were collected. Gagnepain reports the variety from Hongkong. It differs from the species in the rounded leaf-base and the compact inflorescence. It is well to add, however, that there is a specimen in the Royal Botanic Garden, Edinburgh, collected by Bodinier in Happy Valley, Hongkong, March, 1894, which has rather broad leaves with rounded base but the inflorescence is open.

Native of the Indo-Malaysian region, now pantropic in cultivation.

6. **Syzygium brachyantherum** sp. nov.

Arbor 3–12 m. alta; ramulis teretibus vel subcompressiusculis; foliis anguste ellipticis, 8–14 cm. longis, 2.5–5 cm. latis, basi obtusis, apice obtuse vel abrupte acuminatis, acumine 1–1.5 cm. longo, subcoriaceis glanduloso-punctatis, siccis subtus pallido-brunneis, venis primariis 12–19 utrinque prominulis secus marginem arcuatim confluentibus, venulis laxe reticulatis, petiolo 8–14 mm. longo; inflorescentiis terminalibus 5–10 cm. longis latisque, ramis gracilibus, divaricatis, 2–5 cm. longis, ultimis ± 1 cm. longis; floribus magnis, alabastris obovoideis 12–14 mm. longis, apice 10–11 mm. latis; calycis lobis 4 semiorbicularibus circiter 5 mm. longis, 6 mm. latis, petalis liberis, staminibus elongatis, antheris late ellipticis 0.6–1 mm. longis; fructibus obovoideo-globosis 2 cm. diametro.

YUNNAN, Szemao, *Henry 12651, 12091, 12091A, 12091B;* Ping-pien-Hsien, *Tsai 61322,* July 28, 1934, in ravine 360 m. alt.: HAINAN, Fan Yah, *Chun & Tso 44077,* October 19, 1932, 730 m. alt.; Ngo Ko Shan, Ch'ang-kiang District, *Lau 1894* (type in Herb. Arnold Arb.), June 8, 1933; Yaichow, *Liang 62614, 63154,* August 15 and September 26, 1933; Five Finger Mountain, *McClure 8425,* December 9, 1921.

This species is closely allied to *S. Jambos* (L.) Alston, but it is clearly distinct in its long-petioled and slenderly elliptic leaves and its open and often widely branching inflorescence; the flowers are smaller with shorter pseudostipes and somewhat shorter anthers than in the latter species.

7. **Syzygium imitans** Merr. & Perry, Jour. Arnold Arb. **19:** 113. 1938.

KWANGSI, Shap Man Taai Shan, *Tsang 24111, 24327.* Indo-China.

This species is very much like *S. brachyantherum* Merr. & Perry in general appearance. The inflorescence, however, is rather crowded and has much shorter ultimate branchlets with slightly smaller flowers. The leaves are more glandular and practically all show a secondary submarginal vein, the main one being very distinct. The average length of the petiole is as long as that of the longer ones in *S. brachyantherum.*

8. **Syzygium Boisianum** (Gagnep.) Merr. & Perry, Jour. Arnold Arb. **19:** 115. 1938.

*Eugenia Boisiana* Gagnep. Not. Syst. **3:** 318. 1917 et in Lecomte, Fl. Gén. Indo-Chine **2:** 840, *f. 87.* 1921.

HAINAN, Po-ting, *How 72784,* June 8, 1935, in forest at 360 m. alt.

This species is reported for the first time from China. The collection appears to differ from the Indo-Chinese material only in its somewhat larger leaves. *Eugenia Boisiana* is characterized by Gagnepain as having 10 petals; we suggest that the number is variable, and if used as a key-character, it needs further consideration and support.

9. **Syzygium Championii** (Benth.) comb. nov.

*Acmena Championii* Benth. Jour. Bot. Kew Gard. Miscel. **4:** 118. 1852; Walp. Ann. **4:** 840. 1857; Benth. Fl. Hongk. 119. 1861.

*Eugenia Henryi* Hance, Jour. Bot. **23:** 7. 1885.

*Eugenia Championii* Hemsl. Jour. Linn. Soc. Bot. **23:** 296. 1887; Dunn & Tutcher, Kew Bull. Add. Ser. **10:** 105. 1912; Merr. Lingnan Sci. Jour. **13:** 41. 1934.

*Eugenia Maclurei* Merr. Philip. Jour. Sci. **21:** 350. 1922, Lingnan Sci. Jour. **5:** 136. 1927.

KWANGTUNG, without locality, *Sun Yatsen University 5416, Chun 40107;* Yeungchun, *Wang 38740;* Shi-wan-da-shan, *Tso 23531;* Ying-Tak, Wentongshan, *Liang 61042;* Lokcheong, *Ko 51123;* Sunyi, *Wang 37725;* Fan Shiu Au and vicinity, Wung Yuen District, *Lau 2751;*

Yoongyuen, *Lau 25023;* Loufoushan, *Chun 40430, 40457, Tsiang 1697, Ko 52447, 52459, 53520;* Toishan, *Tso 22390*: HONGKONG, *Sargent s. n.;* below Bowen Road, *Ford s. n.*, October 16, 1893; Happy Valley, *Bodinier 670*: KWANGSI, Pingnan, *Wang 39980;* Seh-feng, Dar Shan, S. Nanning, *Ching 8094*; Shap Man Taai Shan, southeast of Shang-sze, *Tsang 24132, 24555, 24693*: HAINAN, Po-ting, *How 73417, 73597, 73859*; Tai Un, *McClure 7678,* October 26, 1921 (type of *E. Maclurei*); Dung Ka to Wen Fa Shi, *Chun & Tso 43858;* Dung Ka, *Chun & Tso 43917.*

In the material at hand we have not found any tangible differences by which *Eugenia Henryi* Hance and *E. Maclurei* Merr. can be maintained as separate species.

A full discussion of the identity of Bentham's species may be found in Lingnan Sci. Jour. **13**: 41. 1934. Briefly, the original description included two distinct species; one with smaller pale leaves, narrowly clavate calyces and 4-angled branchlets; the other with slightly larger dark brown leaves, ellipsoid fruits and terete branchlets. The first Merrill designated as true *E. Championii* (Benth.) Hemsl., as it is that part of the material with *Acmena* characters on which the original description was based, as *Acmena* was interpreted by Bentham, i. e., that group of species characterized by elongated rather slender calyx tubes that gradually taper to the base.

10. **Syzygium stenocladum** sp. nov.

Arbor ± 12 m. alta; ramulis cinereis subcompressis vel teretibus; foliis anguste ellipticis 4–7 cm. longis, 1.5–3 cm. latis, coriaceis, basi acuminatis, apice obtuse acuminatis recurvatisque, glandulis minutis impressis conspersis, utrinque subconcoloribus, costa supra impressa, venis primariis gracilibus inconspicuis, valde ascendentibus, 2–4 mm. remotis, venulis laxe reticulatis, petiolo 5–7 mm. longo; inflorescentiis terminalibus axillaribusque paucifloris, rachi 5–10 mm. longo; calycis tubo clavato, basi stipitato, 12–13 mm. longo, crebre glanduloso, lobis 0.4 mm. altis.

HAINAN, Ue Lung Ling, Ch'ang-kiang District, *Lau 1454,* (type in Herb. Arnold Arb.), April 4, 1933.

This species is characterized by its slender grayish-white branchlets, the leaves with a recurving apex and strongly ascending primary veins. The calyx is copiously glandular and inclined to be sulcate when dry. The corolla and most of the stamens have already fallen.

Two nearly mature fruiting collections, Hainan, Yaichow, *How 70640,* May 1, 1933; Ka Chik Shan and vicinity, Ch'ang-kiang District, *Lau 1638,* April 26, 1933, are very closely allied, having grayish-white

branchlets and very short and sparsely flowered inflorescences. *How 70640* apparently differs only in having the primary veins of the leaves spreading-ascending. *Lau 1638* has larger thicker leaves more profusely punctate above as well as spreading-ascending primary veins. Possibly both collections are but forms of *S. stenocladum*.

11. **Syzygium rysopodum** sp. nov.

Arbor 14–20 m. alta; ramulis fuscis, subcompressis; foliis ellipticis, 4.5–9 cm. longis, 1.7–3.6 cm. latis, utrinque angustatis, basi obtusis, apice abrupte acuminatis, acumine 5–10 mm. longo, firmis nitidis, coriaceis, olivaceis, subtus pallidis, glandulis minutis impressis conspersis, costa supra impressa, venis primariis ± conspicuis 2–4 mm. remotis in venam unicam secus marginem confluentibus; petiolo 9–14 mm. longo, transversim corrugato; cymis terminalibus et in axillis superioribus usque ad 6 cm. longis, alabastris ignotis; calycis lobis 5, 0.5–0.8 mm. longis vix 1 mm. latis, obtusiusculis, tubo 12 mm. longo, 4 mm. lato, longitudinaliter rugoso, late clavato, breviter stipitato, staminibus numerosis, antheris suborbicularibus, vix 0.4 mm. longis, stylo 4.5–5 mm. longo; fructibus pyriformibus vel ellipsoideis, circiter 1 cm. longis.

HAINAN, *Liang 65063*, February 21, 1933, shaded forest, midway up the mountain; Po-ting, *How 73669* (type in Herb. Arnold Arb.), September 14, 1935, ravine in forest at about 480 m. alt.; Yaichow, *How & Chun 70137*; Mo San Leng, *Chun & Tso 44316*.

A rather distinct species with the longitudinally wrinkled calyx as its obvious character. The flowers of the type-specimen have already passed anthesis. The fruit is red with one or two seeds and the embryo is similar to that found in the seeds of the other clavate-flowered species of *Syzygium*.

12. **Syzygium claviflorum** (Roxb.) Wall. List no. 3575. 1931, *nomen nudum;* Cowan & Cowan, Trees North. Bengal 67. 1929.

*Eugenia claviflora* Roxb. Hort. Bengal. 37. 1814, *nomen nudum*, Fl. Ind. ed. 2, **2**: 488. 1832; Wight, Ic. **2**: *t. 606*. 1843; Kurz, Jour. As. Soc. Bengal **46**(2): 65. 1877, For. Fl. Brit. Burma **1**: 480. 1877; Duthie in Hook. f. Fl. Brit. Ind. **2**: 484. 1878; King, Jour. As. Soc. Bengal **70**(2): 107. 1901 (Mater. Fl. Malay. Penin. **3**: 537); Craib, Fl. Siam. Enum. **1**: 635. 1931; Merr. & Chun, Sunyat. **2**: 43. 1934.

HAINAN, *Liang 65221, 65372, Wang 36691;* Po T'eng Shi (BoDeng) and vicinity, Ling Shui District, *Fung 20020;* Chim Shan, Fan Maan Ts'uen, *McClure 20128;* near Po-ting, *Liang 61602;* Tun Shan Lin, Manyun, *Ko 52125;* Chung Ngo Shan, Ch'ang-kiang District, *Lau 3355;* I Kap Shan and vicinity, Tan District, *Lau 1189;* Chim Fung Ling, Kan-en District, *Lau 3424;* Yaichow, *How & Chun 70206, How 70665*.

This material is reasonably constant in floral characters, texture and venation of leaves, and color of bark. Although the leaves show a strong tendency to be elliptic rather than lanceolate as in the original description, the collections compare favorably with specimens available to us from Chittagong, the type-locality of this species. Burma, Siam, Indo-China, and the Malay Peninsula.

13. **Syzygium leptanthum** (Wight) Niedenzu in Engler & Prantl, Nat. Pflanzenfam. **3**(7): 85. 1893.

*Eugenia leptantha* Wight, Ill. **2**: 15. 1841, Ic. **2**: *t. 528*. 1843; Kurz, Jour. As. Soc. Bengal **46**(*2*): 65. 1877, For. Fl. Brit. Burma **1**: 480. 1877; Duthie in Hook. f. Fl. Brit. Ind. **2**: 484. 1878; Gagnep. in Lecomte, Fl. Gén. Indo-Chine **2**: 833. 1921; non Benth. (1840).

*Eugenia claviflora* var. *leptantha* King, Jour. As. Soc. Bengal **70**(*2*): 108. 1901 (Mater. Fl. Malay. Penin. **3**: 538).

*Eugenia leptalea* Craib, Fl. Siam. Enum. **1**: 649. 1931.

YUNNAN, Szemao, *Henry 12860, 12921, 12921A*.

Most of the flowers on these specimens have already opened, but, of the remaining buds, two dissected had eight petals each. Among the species of *Syzygium* with clavate flowers and small calyx-lobes (± 1 mm. high), as far as we know, only *S. Boisianum* (Gagnep.) Merr. & Perry and *S. Wightianum* Wight have been reported as having more than the usual number (4–5) of petals. The first is readily excluded on foliar characters; likewise the second, if the material of that species in our herbarium (Pen. Ind. Or., *Hb. Wight 1036*, distr. Royal Gardens, Kew 1866–7, and Malabar, Concan, *Stocks, Law*) may be regarded as authentic.

On the other hand, our specimens are fairly comparable to *Griffith* (*Herb. East India Co. 2367*, distr. Royal Gardens, Kew, 1861–2) cited by King, l. c., as *E. claviflora* var. *leptantha* King (in the Griffith collection there was at least one flower with eight petals), i. e., *S. leptanthum* (Wight) Ndz. and, provisionally we are placing our collections in this species.

We are not greatly assured as to its true identity nor as to that of *S. claviflorum* Wall. Our nearest approach to the original of each is found in the descriptions and in Wight, Ic. *t. 528* and *t. 606*. The first illustration shows a flowering branch natural size; *t. 606* is a copy of Roxburgh's original drawing without reference to size. Doubt as to the identity of the two must have existed in Wight's mind since *t. 528* is labeled *Eugenia* (*A*) *claviflora* ? Roxb. although his legend is *Eugenia* (*A*) *leptantha* (R. W.). We note that *S. leptanthum* (Wight) Ndz., as meagerly represented in our herbarium by six sheets, tends to have

slightly smaller leaves and often smaller flowers than those shown in Wight's plate.

14. **Syzygium Rockii** sp. nov.

Arbor ± 12 m. alta; ramulis tetragonis subfuliginosis; foliis ellipticis, coriaceis, nitidis, olivaceis, supra pallidis, 8–10 cm. longis, 2.5–3.5 cm. latis, basi obtusiusculis, apice obtuse acuminatis, acumine ± 1 cm. longo, subtus glandulis minutis conspersis; costa subtus prominente, venis primariis utrinque vix elevatis, 2–3 mm. remotis, ad marginem in venam unicam confluentibus, venulis laxe reticulatis; petiolo ± 1 cm. longo; paniculis terminalibus et in axillis superioribus, 5–10 cm. altis, ramulis ultimis brevibus; floribus glomerulatis, alabastris 8–9 mm. longis, apice 2.5 mm. diametro; calycis tubo glaucescente, lobis 1–1.5 mm. longis, obtuse triangularibus, antheris late orbiculatis; stylo ± 3 mm. longo.

YUNNAN, Muang Hing plain, between Muang Hing and Szemao and the Szemao hills proper, *Rock 2742* (type in Herb. Arnold Arb.), March 2, 1922.

A very distinct species belonging to the Leptomyrtus group, and characterized by long slender caducous bracts, glaucous calyces and 4-angled branchlets. The inflorescence is widely branching with the tips of the branches subdividing, very slightly elongating and bearing flowers in glomerules or fascicles.

15. **Syzygium tephrodes** (Hance) comb. nov.

*Eugenia tephrodes* Hance, Jour. Bot. **23**: 7. 1885; Forbes & Hemsl. Jour. Linn. Soc. Bot. **23**: 298. 1887; Merr. Lingnan Sci. Jour. **5**: 137. 1927.

HAINAN, *Henry 8258, Moninger 51, Liang 63738, 64932, Wang 33411;* near Ka-chik, *Henry 162* (type in Herb. Brit. Mus.; phot. and carbon imprint); Yaichow, *Liang 61953, 63098;* Tai Un, *McClure 7828;* Po-ting, *How 72816, 73350;* Mo San Leng, *Chun & Tso 44394;* Tung Koo Shan and vicinity, Wen-ch'ang District, *Fung 20351;* Mei Maan and vicinity, *Lei 10;* Pak Shik Ling and vicinity, Ching Mai District, *Lei 696.*

In the characters of the branchlets, inflorescence and fruit, *S. tephrodes* and *S. Tsoongii* are very much alike. The branchlets of the former may more nearly approach a winged condition at or just below the nodes and the flowers of the latter may have a little longer pseudostipe, but these differences are only in degree or scarcely worth mentioning. The foliar characters, however, are definitely those of distinct species; the leaves of *S. tephrodes* (Hance) are ovate or elongate-ovate with a rounded, emarginate, or subcordate base; whereas, those of *S. Tsoongii* are narrowly oblong with an acute base.

16. **Syzygium Tsoongii** (Merr.) Merr. & Perry, Jour. Arnold Arb. **19**: 112. 1938.

*Eugenia leucocarpa* Gagnep. Not. Syst. **3**: 327. 1918 et in Fl. Gén. Indo-Chine **2**: 828. 1921, non Merr. 1916.

*Eugenia Tsoongii* Merr. Philip. Jour. Sci. **21**: 504. 1922.

KWANGTUNG, Yamchow, *Tsoong 1867* (*C. C. C. 3748*) (type of *E. Tsoongii* in Herb. Manila): HAINAN, *Liang 64157, Wang 33342, 36838;* Dung Ka to Wen Fa Shi, *Chun & Tso 43676, 43688,* in thicket by stream at about 500 m. alt.; Po-ting, *How 72810, 73714;* Yaichow, *How 70528, Liang 62020;* Lokwui, *How 72270;* Chung Kon, *Gressitt 1034.* Indo-China.

*How 72270* varies a little from the other specimens cited in having broader leaves somewhat tapering at the apex.

*Eugenia leucocarpa* Gagnep. and *E. Tsoongii* Merr., described independently, are apparently the same species. Although Gagnepain's is the earlier name, owing to the fact that it is a later homonym of *E. leucocarpa* Merr. Philip. Jour. Sci. Bot. **11**: 23. 1916, it must be rejected.

17. **Syzygium zeylanicum** (L.) DC. Prodr. **3**: 260. 1828; Merr. & Perry, Jour. Arnold Arb. **19**: 101. 1938.

*Myrtus zeylanica* Linn. Sp. Pl. 472. 1753.

*Eugenia spicata* Lam. Encycl. **3**: 201. 1789; Koord. & Val. Meded. Lands Plant. **40**: 122. 1900 (Bijdr. Boomsoort. Java **6**: 122).

*Eugenia zeylanica* Wight, Ill. **2**: 15. 1841; Duthie in Hook. f. Fl. Brit. Ind. **2**: 485. 1878; King, Jour. As. Soc. Bengal **70**(2): 108. 1901 (Mater. Fl. Malay. Penin. **3**: 538); Gagnep. in Lecomte, Fl. Gén. Indo-Chine **2**: 804. 1920; Merr. Enum. Born. Pl. 434. 1921; Ridl. Fl. Malay Penin. **2**: 738. 1922; non Willd.

*Syzygium bracteatum* Korth. Nederl. Kruidk. Arch. **1**: 205. 1847.

*Eugenia varians* Miq. Anal. Bot. Ind. **1**: 21. 1850.

*Syzygium coarctatum* Blume ex Miq. l. c., in syn., excl. syn. *S. rugosum* Korth.

*Eugenia myrtifolia* sensu Miq. Anal. Bot. Ind. **1**: 20. 1850, non Roxb.

*Myrtus lepidocarpa* Korth. ex Miq. l. c., in syn.

*Syzygium myrtifolium* Miq. Fl. Ind. Bat. **1**(1): 456. 1855.

*Jambosa bracteata* Miq. op. cit. 437.

*Eugenia antiseptica* sensu Ridl. Jour. Bot. **68**: 17. 1930, non O. Ktze.

KWANGTUNG, *Chun 51635,* July 18, 1931; Sunyi District, *Wang 32075;* Yeungchun, *Wang 38666.* India and Ceylon to Burma and Indo-China, southward to Sumatra, Java, and Borneo.

*Syzygium zeylanicum* DC. and *S. odoratum* DC. are very closely related species. In the former, however, the leaves are usually more rounded-cuneate at base and the primary veins are more spreading-ascending; the flowers are usually a little larger with slightly longer calyx-lobes and there is a tendency for the calyx-tube to be verruculose.

18. **Syzygium odoratum** (Lour.) DC. Prodr. **3**: 260. 1828; Hook. & Arn. Bot. Beechey's Voy. 187. 1833; Benth. Fl. Hongk. 119. 1861; Merr. & Perry, Jour. Arnold Arb. **19**: 102. 1938.

*Opa odorata* Lour. Fl. Cochinch. 309. 1790; Moore, Jour. Bot. **63**: 283. 1925; non *Eugenia odorata* Berg.

*Eugenia Millettiana* Hemsl. Jour. Linn. Soc. Bot. **23**: 297. 1887; Merr. Trans. Amer. Philos. Soc. **24**(2): 285. 1935, Lingnan Sci. Jour. **14**: 41. 1935.

*Eugenia Deckeri* Gagnep. Not. Syst. **3**: 323. 1918 et in Lecomte, Fl. Gén. Indo-Chine **2**: 807. 1920.

China, without locality, ex herb. *Lindley*: Kwangtung, Canton, *Arnott s. n.;* Pon-tan, Hoi Kong District, Luichow, *Tsiang 2549, 2566;* Kouang-tcheou, *Decker 15* (type of *E. Deckeri* Gagnep.); Lappa Island, near Macao, *Hance 1314*: Hongkong, Sha-tin, New Territory, *Chun 4944, 5114*: Hainan, Po-ting, *How 73460;* Wong Kam Shan, Ngai District, *Lau 564*. Cochin-China, photograph of the type of *Opa odorata* Lour., original in the herbarium of the British Museum.

A complete discussion of this species under the name *Eugenia Millettiana* Hemsl. may be found in Merrill, Trans. Amer. Philos. Soc. **24**(2): 285. 1935, Loureiro's specific name *odorata* being invalid in *Eugenia*. Confusion in the concept of the species arose owing to the fact that the collections cited by Hemsley (and therefore accepted as correct) represent this and a very different species which has since been described as *Eugenia Levinei* Merr. Nomenclaturally, when no original description is given, the name must be interpreted from the synonymy rather than from erroneously named specimens. Hooker & Arnott suggested the possibility of *S. lucidum* Gaertn. as a synonym and Seemann accepted it as such, but Britten (Jour. Bot. **58**: 151. 1920) points out that *S. lucidum* Gaertn. is an Australian species and not identical with the one in question. Loureiro's specific name is valid in *Syzygium* but is invalid in *Eugenia*.

Doctor F. Gagnepain very kindly sent us a leaf and a flower of the type of *Eugenia Deckeri* Gagnep. As we had already suspected, true *Syzygium odoratum* DC. is the species represented. Further, it is to be noted that Kouang-tcheou, where Gagnepain's type was collected, is the small French possession just northeast of Luichow Peninsula in Kwangtung Province, China, and is hence geographically a part of China not of Indo-China. *Eugenia Millettiana* sensu Gagnep. in Lecomte, Fl. Gén. Indo-Chine **2**: 823. 1920, is *S. Levinei* (Merr.) Merr. & Perry.

19. **Syzygium araiocladum** sp. nov.

Arbuscula ± 1 m. alta; ramulis teretibus vel subcompressis, gracillimis

ferrugineis; foliis coriaceis, 3–5 cm. longis, 0.6–1.5 cm. latis, lanceolatis, basi acutis vel obtusiusculis, apice longissime obtuseque acuminatis, acumine 1.5–2 cm. longo, subtus glandulis minutis impressis conspersis ad marginem crebris, costa supra impressa, venis primariis vix perspicuis, ± 2 mm. remotis, petiolo 2–3 mm. longo; inflorescentiis terminalibus et in axillis superioribus, ± 2.5 cm. longis, paucifloris; alabastris clavatis 7–8 mm. longis, apice 2–2.5 mm. latis, basi longe stipitatis; calycis tubo glaucescente, lobis vix 0.5 mm. longis, deltoideis, antheris orbiculatis, stylo ± 4 mm. longo; fructibus ignotis.

KWANGSI, Shap Man Taai Shan, near Hoh Lung Village, southeast of Shang-sze, Kwangtung Border, Shang-sze District, *Tsang 22482, 22559* (type in Herb. Arnold Arb.), June, 1933.

This species is apparently related to *Syzygium odoratum* DC. It is, however, a smaller shrub with very slender almost thread-like branchlets and strikingly different leaves. The tip of the leaf is practically linear and almost as long as the rest of the blade; the lower surface is sparsely dotted with minute glands which become very abundant close to the margin, and more or less form a marginal row. Then, too, the pseudostipe of the flower is longer and more slender than that of any other Chinese species of the Leptomyrtus group.

20. **Syzygium myrsinifolium** (Hance) comb. nov.

*Eugenia myrsinifolia* Hance, Jour. Bot. **23**: 8. 1885; Forbes & Hemsley, Jour. Linn. Soc. Bot. **23**: 297. 1887; Merr. Lingnan Sci. Jour. **5**: 137. 1927.

HAINAN, *Henry* (type in Herb. Brit. Mus.; carbon imprint), *Liang 64578,* January 13, 1934, margin of stream, *Wang 33343, 34274, 35429;* Dung Ka, *Chun & Tso 43520,* along stream, about 500 m. alt.; Tungkap, Tingan, *Ko 52286,* January 5, 1932; Hung Mo Shan, *Tsang & Fung 420* (*L. U. 17954*), *669* (*L. U. 18203*), *Tsang, Tang & Fung 176* (*L. U. 17707*), May 15, 1929; Nga Wan, *McClure 8347,* December 6, 1921; Five Finger Mountain, *McClure 8525,* December 18, 1921; near Shui Mun, *McClure 3085* (*C. C. C. 9637*), May 15, 1922, shady ravine, edge of mountain stream, 600–650 m. alt.; Seven Finger Mountains, *Liang 61756,* May 5, 1932; Yaichow, *Liang 62529,* August 11, 1933; between T'ang K'iu (Din-kio) and Po T'eng Shi (BoDeng), Ngai District, *McClure 20039,* April-May, 1932; Sama Kong and vicinity, *McClure 20039,* April-May, 1932; Po-ting, *How 72173, 73716.*

*Syzygium myrsinifolium* (Hance) Merr. & Perry and *S. Levinei* (Merr.) Merr. & Perry are the only two described Chinese species of *Syzygium* which do not have glabrous inflorescences. They are quite unlike as to flowers and foliage. The first has slenderly obovoid flower-

buds about 6 mm. long and oblong leaves; the second has turbinate flower-buds near 4 mm. long and elliptic to ovate-elliptic leaves.

21. **Syzygium Levinei** (Merr.) Merr. & Perry, Jour. Arnold Arb. **19**: 110. 1938.

*Eugenia Levinei* Merr. Lingnan Sci. Jour. **13**: 39. 1934.

*Eugenia Millettiana* sensu Dunn & Tutcher, Kew Bull. Add. Ser. **10**: 105. 1912; Gagnep. in Lecomte Fl. Gén. Indo-Chine **2**: 823. 1920; McClure, Lingnan Univ. Sci. Bull. **3**: 30. 1931; non Hemsl.

KWANGTUNG, without locality, *Chun 5145, 9849, 40126;* vicinity of Canton, *Kwok 80453, Wang 30559;* Lantau Island, *McClure 13107, Tsang 16638;* Lofoushan, *Chun 40502, 40963, Ko 52422, Ford s. n., Merrill 10713* (type in Herb. Manila), August 28, 1917; Toishan, *Tso 22540;* Ting Woo Shan, Kao-Yao District, *Lau 20245;* Poon Ue, Paak Shan, *Kwok 6803;* Poon Yue District, *Levine 3251;* Kong Moon, *McClure & Fung 00455* (*L. U. 19636*); Kochow, *Tsiang 871, 945*: HONGKONG, *Chun 5110, 40306, 41744, Tsiang 359, Wright s. n., Wang 30316;* Aberdeen Road, *Gibbs* (*Herb. Hongkong 7492*); Ta-wei, New Territory, *Chun 5135;* Sha-tin, *Chun 5107;* August, 1927; Ma Au Shan, *Tsiang 201,* April 17, 1928; Wu Kau Tin, *Chun 6231, Tsiang 2976, 2989;* Causeway Road, *Ford s. n.* in part, August 17, 1893; Little Hongkong, *Chun 4987;* Wong Nei Chong, *Tsiang 2997,* August 14, 1929; Bowen Road, *Tsiang 2997, Bodinier 1295;* Peak, *Wang 3023*: KWANGSI, Seh-Feng, Dar Shan, S. Nanning, *Ching 7858,* October 15, 1928, in woods at about 360 m. alt.: HAINAN, *Fenzel* (*S. Y. U. 17736*), *Liang 63305, 64947, 65142, Wang 33433, 34317;* Namdmu, *Chun 5918;* Tung Koo Shan and vicinity, Wen-ch'ang District, *Fung 20434;* Yaichow, *How 71076;* Fung Leng, Ngai District, *Lau 486;* Tai Tin Shan, Ch'ang-kiang District, *Lau 1279;* Ka Chik Shan and vicinity, *Lau 1466;* Chim Fung Ling, Kan-en District, *Lau 3543,* forest; Mei Maan and vicinity, Ching Mai District, *Lei 21;* Sha Po Shan and vicinity, Taam-chau District, *Tsang 631* (*L. U. 16130*).

*Syzygium Levinei* (Merr.) Merr. & Perry is the correct name for the species which, until very lately, has been confused with *Syzygium odoratum* DC. (*E. Millettiana* Hemsl.). They are much alike as to foliage but the inflorescences are very different, at least when dry. In the former, the axes and branches are minutely papillate and the flowers dry a dark brown; in the latter the axes of the inflorescences are smooth and the flowers are glaucous or pruinose on drying.

22. **Syzygium yunnanense** sp. nov.

Arbor ± 9 m. alta; ramulis subcompressis albis vel cinereis; foliis late

lanceolatis, utrinque angustatis, basi acutis, apice obtuse acuminatis, 9–17 cm. longis, 2.5–5 cm. latis, coriaceis, siccis brunneis, subtus pallidis et minute glanduloso-punctatis, venis primariis perspicuis, ± 1 cm. remotis, intra marginem arcuatim anastomosantibus, venulis inconspicuis; petiolo 1.5–2 cm. longo; paniculis pluribus terminalibus et in axillis superioribus aggregatis, 2.5–4.5 cm. longis, ramulis obscure tetragonis, minute pustulatis, 3–5-floris; alabastris obovoideis, 2–2.5 mm. longis, apice circiter 1.5 mm. latis, calycibus obsolete 4-dentatis vel undulatis, staminibus vix 2 mm. longis, antheris ovatis, connectivo in glandulam producto.

YUNNAN, Szemao, *Henry 12938* (type in Herb. Arnold Arb.).

This species is undoubtedly very closely related to *S. cinereum* Wall., in which the branches of the inflorescence are brachiate, the primary veins of the leaves anastomose 3–5 mm. from the margin and a second submarginal vein may be faintly present; glandular punctations too are sparse or lacking. In *S. yunnanense* Merr. & Perry, on the other hand, the branches of the inflorescence are ascending, the flowers perhaps a little larger, the primary veins anastomose about 2 mm. from the margin and the leaves are much more puncticulate.

23. **Syzygium Nienkui** sp. nov.

Arbuscula vel arbor parva, glabra, 3–12 m. alta; ramis teretibus, cinereis, ramulis 2–4 mm. crassis, tetragonis, anguste alatis, olivaceis vel brunneis; foliis coriaceis, olivaceis, ellipticis vel oblongo-obovatis, 10–20 cm. longis, 4.5–8 cm. latis, basi cuneatis vel obtusiusculis, apice abrupte obtuseque acuminatis, acumine ± 1 cm. longo, supra minute pellucido-punctatis, subtus pallidioribus, venis primariis 15–18, 7–12 mm. remotis prominulis, venulis vix conspicuis laxe reticulatis, vena intramarginali a margine 2–3 mm. distante, costa supra impressa; petiolo 1–1.5 cm. longo; paniculis axillaribus terminalibusque vel ex axillis defoliatis, 1.5–4.5 (plerumque 3) cm. longis, ramis brachiatis ad 2 cm. longis, tetragonis vel subalatis, 1–3-floris; alabastris obovoideis, 4.5–5.5 mm. longis, apice 4 mm. diametro; calycis parte limboidea valde depresso-cupulari, post anthesin fere plana, lobis vix 0.4 mm. longis, 1 mm. latis, petalis calyptratim deciduis.

HAINAN, *Liang 64187,* in light woods on slope of hill, *Wang 34300, 34705, 35056, 35350, 36369;* Dai Land, Dung Ka, *Chun & Tso 43905* (type in Herb. Arnold Arb.), September 23, 1932, in forested ravine, about 700 m. alt.; Po-ting, *How 73070,* July 4, 1935, in forest at about 360 m. alt.

This species is closely allied to *S. tetragonum* Wall. It differs in the

very definitely winged branchlets, the coarser and narrowly winged rachis and the larger flowers. In addition to these apparently constant characters the leaves of this species dry an olive-green; whereas, in *S. tetragonum* they are reddish-brown when dry. The specific name is derived from the given names of one of the collectors, Nien Ku Chun. This was indicated by Prof. W. Y. Chun as a new species under *Eugenia*. It is named in honor of N. K. Chun.

24. **Syzygium tetragonum** Wall. List no. 3550. 1831, *nomen nudum;* Wight, Ill. **2**: 16. 1841, in syn.; Walp. Repert. **2**: 179. 1843; Cowan & Cowan, Trees North. Bengal 67. 1929.

*Eugenia tetragona* Wight, Ill. **2**: 16. 1841; Kurz, Jour. As. Soc. Bengal **46**(*2*): 66. 1877, For. Fl. Brit. Burma **1**: 484. 1877; Duthie in Hook. f. Fl. Brit. Ind. **2**: 497. 1879.

*Syzygium rameum* Wall. List no. 3595. 1831 (fide Duthie), *nomen nudum.*

YUNNAN, without locality, *Forrest 29973;* Salwin-Irrawadi Divide, near La-To-Wa-Di, *Forrest 954,* banks of streams, side valleys of the Salwin; Shweli valley, *Forrest 8296, 9572, 11810;* Shweli-Salwin Divide, *Forrest 24424, 24425, 26149;* hills 3 days south of Tengyueh, *Forrest 26667;* watershed of Black River or Papienho, between Mohei and Maokai, *Rock 2925;* Lung-ling Hsien, *Tsai 55031, 56673, 56686;* Mongka, *Tsai 56338, 56767;* Szemao, *Henry 12650, 12650A, 12650C;* Kintung, near Jiutsun, *Tsiang 12409;* Tsukai, *Tsiang 12230.*

In the collection *Henry 12650C,* the primary veins are not so far apart as in the other collections cited. On the whole our material is a good match for various collections of *E. tetragona* Wight from Assam and Burma. Unfortunately we have no representation from the type-locality. Wight describes the stems (branchlets) as 4-sided with winged angles. Some specimens of the Indian material have the branchlets sharply quadrangular though not definitely winged, others show merely compressed or obtusely quadrangular branchlets; the latter compare well with the Chinese collections.

Craib, Fl. Siam. Enum. **1**: 664. 1931, suggests, in his discussion of *E. subviridis* Craib, that the material passing as *E. tetragona* Wight contains two species, the true *E. tetragona* Wight and *E. ramosa* Wall., the latter being the more common. At present we have not located the second binomial; is it possible that *S. rameum* Wall. is the one intended? Duthie included *S. rameum* Wall. under *E. tetragona* Wight and noted that the branchlets were not so acutely 4-gonous.

25. **Syzygium balsameum** Wall. List no. 3592. 1831, *nomen nudum;* Wight, Ill. **2**: 16. 1841 in syn.; Walp. Repert. **2**: 179. 1843; Cowan

& Cowan, Trees North. Bengal 68. 1929; Merr. & Perry, Jour. Arnold Arb. **19**: 108. 1938.

*Eugenia balsamea* Wight, Ill. **2**: 16. 1841; Kurz, Jour. As. Soc. Bengal **46**(*2*): 66. 1877, For. Fl. Brit. Burma **1**: 485. 1877; Duthie in Hook. f. Fl. Brit. Ind. **2**: 499. 1879; Craib, Aberdeen Univ. Studies **57**: 84. 1912 (Contrib. Fl. Siam, Dicotyl.); Gagnep. in Lecomte, Fl. Gén. Indo-Chine **2**: 819. 1920.

*Memecylon floribundum* Wall. List no. 4113. 1831 (fide Duthie), *nomen nudum.*

YUNNAN, Szemao, *Henry 12682, 12798;* between Muang Hai and Keng Hung, *Rock 2479,* February 15–17, 1922, grassy shaded bank of the Nam Ha.

In addition to the above specimens we have examined the following collections, Sikkim, *Hooker f.;* Silhet, *Hooker f. & Thomson;* Assam, *Dr. King's Collector, Mann;* Indo-China, province of Tuyen-Quang (no collector given). All appear to make a consistent series giving the species a geographical range from the Himalayan region in India to Burma, Indo-China and the southwestern part of China. Craib, Fl. Siam. Enum. **1**: 633. 1931, points out that there is no record of its occurrence in the Malay Peninsula. Although *S. balsameum* seems not to have been noted in the various reports on the flora of China, both Duthie and Craib record it as occurring in Yunnan.

26. **Syzygium Cumini** (L.) Skeels, U. S. Dept. Agric. Bur. Pl. Ind. Bull. **248**: 25. 1912; Alston, Handb. Fl. Ceyl. **6**(Suppl.): 116. 1931; Merr. & Perry, Jour. Arnold Arb. **19**: 108. 1938.

*Myrtus Cumini* Linn. Sp. Pl. 471. 1753.

*Eugenia Jambolana* Lam. Encycl. **3**: 198. 1789; Wight, Ill. **2**: 16. 1841, Ic. **2**: *t. 535.* 1843; Kurz, Jour. As. Soc. Bengal **46**(*2*): 67. 1877, For. Fl. Brit. Burma **1**: 485. 1877; Duthie in Hook. f. Fl. Brit. Ind. **2**: 499. 1879; King, Jour. As. Soc. Bengal **70**(*2*): 131. 1901 (Mater. Fl. Malay. Penin. **3**: 561); Gagnep. in Lecomte, Fl. Gén. Indo-Chine **2**: 818. 1920; Ridley, Fl. Malay Penin. **1**: 754. 1922; Wilder, Bishop Mus. Bull. **86**: 81. 1931; F. Brown, Bishop Mus. Bull. **130**: 202. 1935.

*Jambolifera pedunculata* sensu Lour. Fl. Cochinch. 230. 1790, ed. Willd. 283. 1793; non Linn.

*Jambolifera chinensis* Spreng. Syst. **2**: 216. 1825 (based on *J. pedunculata* Lour.).

*Syzygium Jambolanum* DC. Prodr. **3**: 259. 1828; Wight & Arn. Prodr. **1**: 329. 1834.

*Eugenia Cumini* Druce, Rept. Bot. Exch. Club Brit. Isles **3**: 418. 1914; Merr. Interpret. Herb. Amb. 394. 1917, Enum. Philip. Fl. Pl. **3**: 164. 1923, Lingnan Sci. Jour. **5**: 136. 1927; Craib, Fl. Siam. Enum. **1**: 637. 1931; Merr. Trans. Amer. Philos. Soc. **24**(*2*): 284. 1935.

*Eugenia Tsoi* Merr. & Chun, Sunyat. **2**: 291. 1935.

KWANGTUNG, Hongkong, *Wang 32362*: KWANGSI, Lungchow, *Morse 497;* near Sui-luk, southwest of Nanning, Sui-luk District, *Tsang 21931*: YUNNAN, without locality, *Tsai 55828;* Lu-Shuei, *Tsai 54538;* Lu-se, *Tsai 56309;* Szemao, *Henry 11782 A, B, C*: HAINAN, *Wang 32716, 32888, Liang 65014, 66312;* Notia, *McClure 7787;* Nor T-ai See, *Ford 354;* Yaichow, *Liang 61908, 62067, How 70536, 70777, Chun & Tso 44728;* Nam Shan Ling, *Tso 23006* (type of *E. Tsoi*), *23019;* Lin Fa Shan, Lam Ko District, *Tsang 7, 198* (*L. U. 16756, 15697*); Pak Shik Ling and vicinity, Ching Mai District, *Lei 551;* Tai Wong Ling and vicinity, *Lei 767;* Chim Fung Ling, Kan-en District, *Lau 3408;* Lok Mooi Shan and vicinity, Ch'ang-kiang District, *Lau 1215;* Ue Lung Shan, *Lau 3184;* Ngai Chau and vicinity, Ngai District, *Lau 8;* Paai Poon Ts'uen and vicinity, *Fung 20075;* Tung Koo Shan and vicinity, Wen-ch'ang District, *Fung 20352*.

Widely distributed in the Indo-Malaysian region, extending from India and Ceylon to Malaysia, introduced in other tropical regions.

27. **Syzygium Augustinii** sp. nov.

Arbor? ± 6 m. alta; ramulis compressis vel ± sulcatis cinereis decorticatis rufis; foliis ellipticis, utrinque angustatis, basi acutis, apice obtuse acuminatis, 9–12 cm. longis, 3.5–6 cm. latis, coriaceis, pellucido-punctatis, supra viridibus, subtus pallidioribus, costa supra impressa, venis perspicuis, gracilibus, conferte penninerviis, venulis reticulatis, vena submarginali a margine ± 1 mm. distante, petiolo 7–10 mm. longo, gracili; paniculis axillaribus terminalibusque 3–9 cm. longis; floribus sessilibus, calycis tubo late obconico, basi abrupte longiuscule stipitato, usque ad 5 mm. longo, apice circiter 5 mm. lato, lobis 1.5–2 mm. longis, 2 mm. latis, rotundatis, petalis calyptratim coalitis, deciduis, staminibus numerosis, longis, antheris ellipticis, 0.8 mm. longis, stylo circiter 10 mm. longo.

YUNNAN, Szemao, *Henry 11782* (type in Herb. Arnold Arb.).

The leaves of this species very closely resemble those of *S. Cumini* (L.) Skeels but the inflorescence is both axillary and terminal and the flowers are slightly larger with very obvious calyx-lobes; on the other hand, in *S. Cumini* (L.) Skeels the inflorescence is seldom terminal and the calyx is undulate or obscurely lobed.

28. **Syzygium fruticosum** DC. Prodr. **3**: 260. 1828, Mém. Myrt. *t. 19.* 1842; Merr. & Perry, Jour. Arnold Arb. **19**: 109. 1938.

*Eugenia fruticosa* Roxb. Fl. Ind. ed. 2, **2**: 487. 1832; Wight, Ic. **2**: *t. 624.* 1843; Kurz, Jour. As. Soc. Bengal **46**(*2*): 66. 1877, For. Fl. Brit. Burma **1**: 485. 1877; Duthie in Hook. f. Fl. Brit. Ind. **2**: 499. 1879;

Gagnep. in Lecomte, Fl. Gén. Indo-Chine 2: 843. 1921; Craib, Fl. Siam. Enum. 1: 642. 1931.

YUNNAN, Red River, *Henry 9644;* near Maupan, Red River valley, *Henry 10666;* vicinity of Szemao City, *Tsiang 12702* (*S. Y. U. 73027*), November 27, 1933.

Our collections seem to compare favorably with those of the above species from Bengal, Upper Burma and Indo-China. The leaves may be slightly narrower but the venation is very similar and the flowers are much like those of the Indian specimens.

29. **Syzygium cathayense** sp. nov.

Glabra; ramulis tetragonis, pallide brunneis; foliis coriaceis, anguste ellipticis, basi acutiusculis vel obtusis, apice acuminatis supra atro-brunneis, subtus pallidioribus, margine subrevolutis, costa supra impressa, venis primariis prominulis, utrinque 8–12, 5–7 mm. remotis, secus marginem in venas duas arcuatim confluentibus, venulis gracilioribus, laxe reticulatis; petiolo ruguloso 7–10 mm. longo; paniculis terminalibus et in axillis superioribus, ± 4 cm. longis, ramis ad 2.5 cm. longis, flores sessiles plerumque tres gerentibus; alabastris stipitato-globosis; calycis tubo 6–6.5 mm. longo, apice 4–4.5 mm. lato, lobis 4 circiter 2 mm. longis latisque, rotundatis, petalis liberis, staminibus longis, numerosis, antheris ellipticis, 0.5 mm. longis, stylo circiter 13 mm. longo gracili.

KWANGTUNG, Fang Cheng, *Wu 104* (*S. Y. U. 67797*) (type in Herb. Sun Yatsen Univ.).

The open venation of the leaves, with the primary veins anastomosing well within the margin forming a very definite submarginal vein outside of which is a secondary and less obvious one, suggests an alliance with the larger-flowered species (*S. Jambos* [L.] Alston and others), which is perhaps emphasized by the relatively large calyx-lobes. In addition to the characters already mentioned, the small flowers and the 4-angled brownish white branchlets render this a very distinct species.

30. **Syzygium sterrophyllum** Merr. & Perry, Jour. Arnold Arb. 19: 103. 1938.

*Eugenia fluviatilis* sensu Gagnep. in Lecomte, Fl. Gén. Indo-Chine 2: 810. 1920, non Hemsl.

KWANGTUNG, Shi-wan-da-shan, *Tso 23377* (type in Herb. Arnold Arb.), July, 1933, shrub in shaded ravine: KWANGSI, Seh-feng, Dar Shan, S. Nanning, *Ching 7857, 7890, 8089, 8230,* October, 1928; Shap Man Taai Shan, southeast of Shang-sze, *Tsang 23807, 24411, 24720.* Indo-China.

This species is most like *S. fluviatile* (Hemsl.) in habit. It differs in

the tetragonous branchlets, the obtusely acuminate leaves, and the sessile or subsessile flowers.

31. **Syzygium Handelii** sp. nov.

*Eugenia acuminatissima* sensu Léveillé, Fl. Kouy-Tchéou, 289. 1914, non Kurz.

*Eugenia Millettiana* sensu Handel-Mazzetti, Symbol. Sin. 7: 596. 1933, non Hemsl.

Frutex flexuosus; ramulis tetragonis, ferrugineis, gracilibus; foliis linearibus oblongisve, 2–5.5 cm. longis, 0.6–1.3 (–1.9) cm. latis, basi in petiolum 2–4 mm. longum attenuatis, apice obtusis, subcoriaceis crebre et pellucide glanduloso-pustulatis siccis brunneis, subtus pallidioribus, venis primariis gracilibus sed prominulis, oblique patulis, utrinque 14–20, in venam submarginalem a margine 1.5–3 mm. distantem confluentibus; paniculis terminalibus et axillaribus, foliis brevioribus, ramulis erecto-patulis, alabastris 3.5–4 mm. longis, pyriformibus, pedicellatis; calycis tubo obconico, apice ± 3.5 mm. lato, lobis circiter 0.5 mm. longis, obtusis, petalis singulatim deciduis, staminibus longis, antheris ovatis, apice glanduloso-mucronatis; fructibus subglobosis, ± 6 mm. crassis, calycis margine elevato persistente coronatis; cotyledonibus semiglobosis.

HUPEH, *Wilson 456* (*S. Y. U. 35123*); Ichang and immediate neighborhood, *Henry 2886*: KWEICHOW, on the river below Sandjio, *Handel-Mazzetti 276–10811* (*Diar. Nr. 2129, 41*) (type in Herb. Arnold Arb.), July 16, 1918, along streams, often submersed; near Tou-chan, *Cavalerie* in hb. Bodinier *2673;* border of stream, *Esquirol 891*: KWANGTUNG, without locality, *Chun 42758*: KWANGSI, south of Nee Bai, border of Kweichow, *Ching 6289.*

This species, quite remote from *S. odoratum* DC. (*E. Millettiana* Hemsl.) belongs to the buxifolium group. It is distinguished by its thinner and prominently veined leaves and their glandular pustulations. In *S. buxifolium* H. & A. the glandular contents seem to have shrunk in drying so that the glands appear as minute dots and the lower surface of the leaves appear as if about to wrinkle. Handel-Mazzetti notes that the leaves vary from 3.7 × 1.9 cm. to 5 × 1 cm. on the same twig.

32. **Syzygium Grijsii** (Hance) comb. nov.

*Eugenia Grijsii* Hance, Jour. Bot. 9: 5. 1871.

*Eugenia pyxophylla* Hance, l. c. 6.

CHEKIANG, without locality, *Tsoong 569;* Tsing Tien, *Keng 70;* Choochow, *Hu 564;* S. Chekiang, *Ching 2424*: FUKIEN, *De Grijs 391* (phot. of type), *Chung 6943;* Changchow, *Chung 872;* Kuliang Hills, near Foochow, *Norton 1276;* Kushan, Foochow, *Chung 8089;* Ku-Dien,

*Chung 8045;* Amoy, *Chung 4676;* Hinghwa District, *Chung 985*: KIANGSI, Lingnan District, *Lau 4645*: KWANGTUNG, *Gilchrist 47, 104 (S. Y. U. 72337, 89692)*; Ying-Tak, *Liang 61194;* Tai Mo Shan, Tapu District, *Tsang 21023*: KWANGSI, *Graves* (phot. of type of *E. pyxophylla*).

A species undoubtedly very closely related to *S. buxifolium* Hook. & Arn., but the thinner and narrowly oblong leaves are numerous and often crowded into verticils, the veins are faintly outlined on the lower surface and the minute punctations more or less scattered. The inflorescence is similar to that of *S. buxifolium* Hook. & Arn. Hemsley reduced both of Hance's species to *Eugenia sinensis* Hemsl.

33. **Syzygium buxifolium** Hook. & Arn. Bot. Beechey's Voy. 187. 1833; Walpers Rep. **2**: 180. 1843; Benth. Jour. Bot. Kew Gard. Misc. **4**: 118. 1852, Fl. Hongk. 118. 1861; Merr. & Perry, Jour. Arnold Arb. **19**: 104. 1938.

*Eugenia microphylla* Abel, Narr. Jour. China 181, 364. 1818; Forbes, Jour. Bot. **22**: 124. 1884; Rehder & Wilson in Sargent, Pl. Wils. **2**: 420. 1915, Jour. Arnold Arb. **8**: 179. 1927; Groff, Lingnan Univ. Sci. Bull. **2**: 76. 1930; McClure, op. cit. **3**: 30. 1931; Handel-Mazzetti, Symb. Sin. **7**: 596. 1933, Beih. Bot. Centralbl. **52B**: 161. 1934; Merr. Jour. Arnold Arb. **18**: 71. 1937; non *Syzygium microphyllum* (Bedd.) Gamble, 1919.

*Syllisium buxifolium* Meyen & Schauer, Nov. Act. Acad. Leop.-Carol. Nat. Cur. **19**: Suppl. **1**: 334. 1843.

*Eugenia* sp. Moore, Jour. Bot. **13**: 227. 1875.

*Eugenia sinensis* Hemsl. Jour. Linn. Soc. Bot. **23**: 298. 1887; Dunn & Tutcher, Kew Bull. Add. Ser. **10**: 105. 1912; Léveillé, Fl. Kouy-Tchéou, 289. 1914.

*Syzygium microphyllum* sensu Masamune, Mem. Fac. Sci. Agr. Taihoku Univ. **11**: 323. 1934, non Gamble.

CHEKIANG, *Tsoong 569 (S. Y. U. 43334)*; Tientaishan, Kwoh Ching Sze, *Chiao 14189;* vicinity of Ningpo, *McGregor s. n.;* south of Pang Yung, *Ching 1981;* Tai Suan, *Ching 2103;* Tai Chow, *Ching 1314;* Chei-Ki, *Ching 4932;* Chu-Hsien, *Keng 861;* Tai Pai Shan, *Keng 1176;* Taishun Hsien, *Keng 292;* Westlake, *Hu 1443;* Hangchow, *Tang & Hsia 83, Allison 53, Meyer 426, 1476*: ANHWEI, Wu Yuan, *Ching 3311*: FUKIEN, *Chung 6678, 7352, Dunn (Herb. Hongkong 2703)*; Kuliang, *Norton 1275, Chung 6460, 7257;* Foochow, *Tang Chung Chang & Uong Sing Po 3775, Carles 562, 658, Hicken s. n.;* Kushan, *Chung F335, 3700, 8012;* behind Kushan Monastery, *Uong Sing Po 12222;* Minhow Hsien, *Chung 2083, 2253;* Buong Kang, Yenping, *Chung 3502*: KIANGSI, Lu Shan, *Steward & Chiao 4729;* Fa Yii Hsien, *Hu 974*: KWEICHOW, mills of Tong-Tcheou, *Esquirol 3237, 3767;* Pin Fa Mount, *Cavalerie*

*403, 600;* Pinfa, Kweiting, *Tsiang 5463;* Miao Wang, Kiangkou Hsien, *Steward, Chiao & Cheo 543;* Ta Ho Yen, Fan Ching Shan, *Steward, Chiao & Cheo 695;* Tuyun, Hwang Chai Shan, *Tsiang 5806*: KWANGTUNG, *Chun 8237, 8524, Loh 8299, Hui 8570* (*S. Y. U. 29002, 34210, 29823, 34250*); Naam Kwan Shan, Tsengshing District, *Tsang 20389;* Tai Mo Shan, Tapu District, *Tsang 21088;* Tung Koo Shan, *Tsang 21648;* Lofoushan, *Chun 41388;* Wong Chuk I and vicinity, Wung Yuen District, *Lau 2174;* Yoongyuen, *Lau 24934, 25167;* Yueyuen, *Ko 53065, 53530, 53567;* Yang-Mei-Lang, *Sin 11890;* Tung Koon, near Cheung Hang Kang, *Lau 00348* (*L. U. 19629*); Tai-O, *Chun 3141;* Tsatmuknggao, near Lienping, *Mell 649;* North River Region, *Wang & Liang 31650;* Pan Ling Tsze, *Chun 5879;* Huang-tung, Yao-Shan, *Sin 9114, 9918;* Canton and vicinity, *Levine 1344;* Lok Chong, *Tso 20992, Ko 51898;* Sam Kok Shan, Tsung-fa-Lungmoon Districts, *Tsang 20537;* Yingtak, *Wang 2898, 30009, Tso 22069, 22175, Liang 61112;* Chung Som Tsuen, *McClure 150;* Sunyi, *Ko 51750, Wang 37914;* Lantau Island, Taai Ue Shan, *Tsang* (*L. U. 16507, 16665*): HONGKONG, *Chun 41774, 41825, Wang 30307, Bodinier 1013, 1149, Sargent s. n., Ford s. n., Wright s. n., Hance 1043, Wilford s. n.;* woods of Little Hongkong, *Bodinier 709;* Tai Ue Mountain, *Fung 00116* (*L. U. 19424*); Sha-tin, *Chun 5311;* Swatow, *Dalziel s. n.* Indo-China, Riu Kiu Islands, and Formosa.

On account of the variation in size and outline of the leaves it has been exceedingly difficult to determine what may be regarded as definite specific lines for *S. buxifolium* H. & A. The above series of collections are reasonably uniform. In addition to these, we have two other groups and a variety which with better representation may prove to be a good species.

The first group cited below is aberrant in having short internodes, crowded and chiefly verticillate leaves usually obviously veined and scattered-punctate; the branches of the inflorescence too are sometimes verticillate but the flowers are like those of *S. buxifolium* H. & A.

ANHWEI, Li Shan, *Ching 3106;* Wu Yuan, *Ching 3306*: HUPEH, *Henry 7758*: KIANGSI, Sai Hang Cheung, Kiennan District, *Lau 3931;* near Ningdu, *Wang 466;* Hong San, near Kit-tan, *Gressitt 1553;* Nanchang, *Hsiung 487;* near Kuling, *Wilson 1576, Chun 4302;* Kan Hsien, *Hu 1159;* between Tsoongjen and Ihwang, *Tsiang 10002;* near Lipeichiao, Tsoongjen, *Tsiang 10182*: HUNAN, Changning Hsien, *Fan & Li 116;* near Tschangscha, *Handel-Mazzetti 284*: KWANGTUNG, without locality, *Ko 50956;* Sunyi District, *Wang 31075, 38168;* open place on bank of Yanfa River, *Mell 83;* Lokchong District, *Chun 42053;* between

Ren Hua and Ben Shi Ling, *Chun 5620;* Lien-Hsien, Yao-Shan, *Tso 22615;* North River Region, *Wang & Liang 31508, Chun 42850;* between Bei Shen and Nan Shung, *Chun 5688;* south of Nam Hsiung, *Chun 5712;* Yam Na Shan (Yit Nga Shan), Mei (Kaying) District, *Tsang 21369, 21513;* Lin District, *Levine 3462;* Tsing Leung Shan, *McClure 268* (*C. C. C. 6742*); Lung T'au Shan, *To & Ts'ang* (*L. U. 12388, 12786*): KWANGSI, Pingnan, *Wang 40366.*

The second group is perhaps intermediate between the typical and var. *austrosinense* Merr. & Perry. The leaves are a little larger and slightly more acuminate.

CHEKIANG, S. Yentang, *Hu 126*: KIANGSI, Oo Chi Shan, Lingnan District, *Lau 4707*: KWANGTUNG, North River Region, *Wang & Liang 31520*: KWANGSI, Tou Ngok Shan, Waitsap District, *Tsang 23118;* Tong Shan, *Tsang 22837;* Shap Man Taai Shan, Shang-sze District, *Tsang 22401;* Mekon Seh-feng, Dar Shan, S. Nanning, *Ching 8226, 8359.*

**Syzygium buxifolium** var. **austrosinense,** var. nov.

Foliis anguste ellipticis, basi obtusiusculis, apice obtuse acuminatis, 4–7 cm. longis, 1.7–3 cm. latis, copiose glanduloso-punctatis, venis primariis utrinque 16–23, 2–3 mm. remotis.

HUPEH, Enshih Hsien, *Chow 1854*: SZECHUAN, Pa Hsien, *Fang 5612*: KIANGSI, Oo Chi Shan, Lingnan District, *Lau 4477*: KWEICHOW, Miao Wang, Kiangkou Hsien, *Steward, Chiao & Cheo 545* (type in Herb. Arnold Arb.), September 27, 1931, on bushy slope at 600 m. alt.; Tushan, *Tsiang 6653*: KWANGTUNG, Wong Chuk I and vicinity, Wung Yuen District, *Lau 2089;* Fan Shiu Au and vicinity, *Lau 2769;* Lung T'au Shan, Iu, *To & Ts'ang 12653*: KWANGSI, In-tung, Miu Shan, N. Luchen, *Ching 6198,* Kweichow border; Bako Shan, W. Poseh, *Ching 7475.*

These collections are practically all in some fruiting stage and, since we have found descriptions of fruiting specimens rather difficult to interpret, it seems preferable to leave them as a variety of *S. buxifolium* H. & A. with which they have been associated and to which they are evidently related although probably specifically distinct. They are all fairly large shrubs (or trees?) and the foliar characters are strikingly dissimilar. In addition to the differences mentioned in the description, the lower surface of the dried leaves of the variety shows no tendency toward shrinkage. In a majority of the specimens of *S. buxifolium* H. & A. the lower surface of the leaves appears as if there had been a trivial shrinkage; this is probably owing to a difference in the texture of the leaves of the two entities.

This species is the type of the genus *Syllisium* Meyen & Schauer, but its type-species, *Syllisium buxifolium* Meyen & Schauer (1843) was not based on the slightly earlier *Syzygium buxifolium* Hook. & Arn. (1841), although the material from which both were described came from the same general region, the neighborhood of Macao. The species was first described by Abel in 1818 as *Eugenia microphylla* but his specific name is invalidated in *Syzygium* by *S. microphyllum* Gamble which was based on *Eugenia microphylla* Beddome, a species very different from *E. microphylla* Abel.

34. **Syzygium salwinense** sp. nov.

Arbor vel arbuscula, 3–15 m. alta; ramulis 4-angulatis interdum sulcatis, cinereis; foliis anguste ellipticis, 4–8 cm. longis, 1.2–3.5 cm. latis, basi cuneatis, apice obtuse acuminatis, coriaceis, siccis supra badiis vel olivaceis, subtus pallidioribus, utrinque punctatis, costa supra impressa, venis primariis et vena submarginali impressis, costa subtus elevata, venis primariis circiter 25, prominulis, subpatulis, venulis laxe reticulatis, vena intramarginali saepissime circiter 2 mm. a margine distante; petiolo 3–10 mm. longo; paniculis axillaribus terminalibusque, 2–4 cm. longis, saepissime foliatis, ramis adscendentibus, floribus sessilibus saepe ternis in apice ramulorum; alabastris ± 5 mm. longis, apice 2.5–3 mm. diametro; calycis tubo pyriformi, lobis vix 0.5 mm. longis, circiter 1.5 mm. latis, petalis singulatim deciduis, staminibus circiter 5 mm. longis, antheris ellipticis, vix 0.5 mm. longis, glanduloso-mucronatis; fructibus globoso-urceolatis, ± 1 cm. diametro.

YUNNAN, hills to the northeast of Tengyueh, *Forrest 9323,* at about 2100 m. alt.; N'Maikha-Salwin Divide, lat. 26° 30′ N., *Forrest 18163* (type in Herb. Arnold Arb.), July, 1919, open situations in thickets at ± 2400 m. alt.; Shweli-Salwin Divide, lat. 25° 45′ N., long. 98° 40′ E., *Forrest 24439, 26089;* Shweli Valley, lat. 25° 45′ N., long. 98° 58′ E., *Forrest 29688.*

Described in the field-notes as an evergreen shrub (8–20 feet) or tree (30–50 feet) with fragrant creamy-white flowers and dull crimson or purple-red fruits.

This is the only species of *Syzygium* in China which is apparently characterized by a leafy inflorescence; probably the flowers and the leaves appear together on the new growth or, if not, the bracts which ordinarily subtend the branches of the inflorescence are large and leaf-like but later caducous. The pattern on the upper leaf-surface formed by the impressed and loosely anastomosing veins and the punctations is distinctive enough to separate this species from *S. szemaoense* Merr. & Perry which it resembles in general habit and leaf-outline.

35. **Syzygium szemaoense** Merr. & Perry, Jour. Arnold Arb. **19**: 105. 1938.

YUNNAN, Szemao, *Henry 12138* (type in Herb. New York Bot. Gard.), *12895;* Lung-ling Hsien, *Tsai 56689*. Indo-China.

This species may be allied to *E. campylocarpa* Gagnep. In that species, however, the leaves are much thinner and obscurely pellucid-punctate; the fruits are inequilateral and slightly curved. Further material is needed to clarify this species. In our species the leaves are thicker and the fruit is regularly formed.

Two collections closely allied, but perhaps not conspecific with the above, are: Hainan, Po-ting, *How 72922, 73422*.

36. **Syzygium Bullockii** (Hance) Merr. & Perry, Jour. Arnold Arb. **19**: 107. 1938.

*Eugenia Bullockii* Hance, Jour. Bot. **16**: 227. 1878; Forbes & Hemsl. Jour. Linn. Soc. Bot. **23**: 296. 1887; Merr. Philip. Jour. Sci. **15**: 249. 1919; Gagnep. in Lecomte, Fl. Gén. Indo-Chine **2**: 817. 1920; Merr. Lingnan Sci. Jour. **5**: 136. 1927, Trans. Amer. Philos. Soc. **24**(2): 284. 1935.

*Myrtus androsaemoides* sensu Lour. Fl. Cochinch. 312. 1790, ed. Willd. 382. 1793, non Linn.

KWANGTUNG, Chung Shan District, Nga Iu Mountain, *Tsang 15* (*L. U. 19254*); Tong Ka Wan, *Fung 2–71* (*L. U. 18677*); Pon-tan, Luichow, *Tsiang 2528;* Canton, *Tsoong 2671*: HAINAN, *Wang 33934, 34008, 36442, 36486;* Hoihow, *Bullock 20289* (type in Herb. Brit. Mus.; carbon imprint of leaf), *Herb. Carles;* Po-ting, *How 72083*, June 24, 1935, grassy slope about 330 m. alt.; Kacheck, Khêng-dong, *Moninger 53;* Pak Shik Ling and vicinity, Ching Mai District, *Lei 827, 1022;* Yaichow, *Liang 62860,* in thickets near the seashore. Indo-China.

Only two other Chinese species of *Syzygium, S. tephrodes* (Hance) and *S. Boisianum* (Gagnep.) Merr. & Perry, have subsessile leaves with rounded bases. These are readily separable on various characters. Both have 4-angled branchlets; *S. tephrodes* usually has glaucous calyces and *S. Boisianum* slenderly clavate flower-buds. On the other hand, *S. Bullockii* is characterized by slightly compressed branchlets and turbinate flower-buds.

37. **Syzygium Forrestii** sp. nov.

Arbor ± 10 m. alta; ramulis compressis vel obscure tetragonis, atro-brunneis, circiter 2 mm. crassis; foliis coriaceis, ellipticis, 6–11 cm. longis, 2.5–4 cm. latis, utrinque angustatis, basi acutis, apice obtuse acuminatis, acumine 1–2.5 cm. longo, supra minute et sparse punctatis venis primariis subtus prominulis, gracilibus, creberrime penninerviis,

reticulatis, in venam submarginalem a margine 0.5–1 mm. distantem confluentibus; petiolo 12–18 mm. longo; paniculis axillaribus terminalibusque, multifloris, 3–8 cm. altis, ramulis 0.5–3 cm. longis, divaricatis; alabastris sessilibus vel subsessilibus, 5 mm. longis, apice globosis, 3.5 mm. diametro, abrupte in stipitem crassiusculum contractis; calycibus obscure lobatis vel truncatis, petalis calyptratim vel singulatim caducis, staminibus numerosis, ad 6 mm. longis, antheris 0.6 mm. longis, ellipticis, apice glanduloso-mucronatis; fructibus ellipsoideis, circiter 8 mm. longis, 6 mm. diametro.

YUNNAN, *Tsiang 3400* (*S. Y. U. 75250*); Mingkwong Valley, *Forrest 9243;* Shweli-Salwin Divide, *Forrest 11750;* Shweli Valley, lat. 25° 20′ N., *Forrest 16086* (type in Herb. Arnold Arb.), in thickets at about 2100 m. alt.; Szemao, *Henry 11764, 11764A, 12764, 12764A*. A tree 20–40 feet high, flowers lemon- or creamy-yellow.

Although our species suggests *S. syzygioides* (Miq.) Merr. & Perry, i. e. *E. cymosa* as interpreted by Duthie, King, Koorders and Valeton and Ridley, but not *E. cymosa* Lamarck, the leaves are longer and more prominently veined and the petioles are about twice as long. The fruit is elongate rather than depressed as in the latter species. *Eugenia cymosa* Lam. was based on a specimen from Mauritius, and our photograph of the type specimen shows it to be totally different from the Indo-Malaysian form currently referred to Lamarck's species by all modern authors.

38. **Syzygium brachythyrsum** sp. nov.

Frutex ± 3 m. altus; ramulis fuscis vel pallide brunneis, teretibus vel leviter compressis, gracilibus; foliis pergamenaceis, ellipticis, 8–10 cm. longis, 3.5–5 cm. latis, basi acutis, apice abrupte obtuseque acuminatis, acumine circiter 1.5 cm. longo, siccis olivaceo-viridibus, subtus pallidioribus vel brunnescentibus, costa supra impressa subtus prominula, venis primariis rectis, numerosis, parallelis, patulis, 2–4 mm. remotis, supra manifestis, subtus perspicuis, venulis laxe reticulatis; petiolo vix 1 cm. longo, tenui, atrobrunneo; inflorescentiis terminalibus, paucifloris (5–?) rachi 1–1.5 cm. longa, ramis circiter 1 mm. longis; alabastris ± 6 mm. longis, apice ± 4.5 mm. diametro, sessilibus vel brevipedicellatis; calycis tubo obconico, lobis 4, 1 mm. longis, 2 mm. latis, obtusis; fructibus oblongo-pyriformibus, ± 1.5 cm. longis, ± 0.7 cm. diametro.

YUNNAN, Ping-pien-hsien, *Tsai 61581* (type in Herb. Arnold Arb), August 22, 1934, in ravine: HAINAN, Tai Tin Shan, *Lau 1324*, March 16, 1933.

*Lau 1324* is a specimen with young branches and detached fruits. Although we believe it to represent the same species as the type, we

would point out that this species should be looked for in Hainan in flower and also with fruits attached; in more than one instance the leaves of two species have appeared to be practically identical, yet the inflorescence or the individual flowers of the two were not at all alike. This species is perhaps most nearly related to *S. oblatum* Wall., but the inflorescence is much too small and too few-flowered for that species, the calyx-lobes are somewhat larger; and if *Lau 1324* is this species (as we believe it is), the fruits are not like those of *S. oblatum* Wall.

39. **Syzygium Chunianum** sp. nov.

Arbuscula vel arbor parva, 3–10 m. alta; ramulis teretibus vel leviter compressis vel sulcatis; foliis oblongo-ellipticis vel ellipticis, basi leviter acuminatis, apice in acumen breve vel longiusculum abrupte productis, 4–10 cm. longis, 1.5–4.5 cm. latis, creberrime pellucido-punctatis, venis primariis divaricatis, 1–3 mm. remotis, venis venulisque subaequaliter manifestis, omnibus parallelis, supra siccis atroviridibus, subtus pallidioribus; petiolo 7–12 mm. longo; paniculis 1.5–3 cm. longis, singulis vel fasciculatis terminalibus axillaribusque, ramulis brachiatis, floribus in apice ramulorum singulis vel ternis, flore centrali sessili, reliquis pedicellatis, alabastris 2–3.5 mm. longis, 2–2.5 mm. diametro, gracilibus obovoideis; calycibus undulatis vel truncatis, staminibus brevissimis; fructibus immaturis.

HAINAN, *Liang 64296, 64444, Wang 35278, 35368, 35822, 36154, 36561, Fenzel s. n., 258* (*S. Y. U. 17727, 17737*); Po-ting, *How 72137, 72666, 73353, 73510;* road between Dung Ka and Wen Fa Shi, *Chun & Tso 43446* (type in Herb. Arnold Arb.), August 15, 1932, in forest along stream at about 600 m. alt.; Dung Ka, Ma Seong Ling, *Chun & Tso 43342;* Manning, *How 73193;* Hung Mo Shan and vicinity, Lai (Loi) Area, *Tsang & Fung 686* (*L. U. 18220*).

In mode of branching of inflorescence and in floral arrangement suggesting *Acmena acuminatissima* (Blume) Merr. & Perry, in leaf-outline and close venation resembling *S. syzygioides* (*Eugenia cymosa* of authors, not of Lamarck), and in general habit most like *S. corticosum* (Lour.) Merr. & Perry as represented by *Clemens 3532* which has been critically compared with Loureiro's type at the British Museum; our species, however, is easily separated from all these. The flowers are smaller than those of *S. syzygioides* and different in outline (obovoid, without tapering to pseudostipe), the petioles are a little longer on the average and the leaves dry olive-green rather than a reddish-brown. *Syzygium corticosum* has much more open leaf-venation with the intramarginal vein more remote from the margin.

Although the material cited is apparently referable to a single species, there is considerable variation in leaf-outline, some leaves are short and broad, others narrower and elongate, and the acumen, at times slender, ranges from 0.5–2 cm. in length.

Dedicated to Professor W. Y. Chun of Sun Yatsen University in appreciation of his energetic work in assembling comprehensive collections of herbarium material from the botanically little known parts of southern China.

40. **Syzygium fluviatile** (Hemsl.) comb. nov.

*Eugenia fluviatilis* Hemsl. Jour. Linn. Soc. Bot. **23**: 296. 1887; Merr. Lingnan Sci. Jour. **5**: 136. 1927.

HAINAN, *Henry 55* (carbon imprint of type), *Liang 63934,* margin of stream, *Wang 33192, 33293;* Lokwui, *How 72272;* Po-ting, *How 73690;* Tsat Cha Ling, Ch'ang-kiang District, *Lei 741;* Pak Shik Ling and vicinity, *Lei 890A;* Tai-too, Seven Finger Mountain, *Liang 61726;* Yaichow, *Liang 62023;* Pat Ka Ling, *McClure 7725;* near Shui Mun, *McClure 9617;* Chiu Sam Tsuen, Ngai District, *Lau 370;* Mei Yeung Tsuen, Taam-chau District, *Tsang 783* (*L. U. 16282*); Chi To Shan, *Tsang 890* (*L. U. 16389*); Ta Hian, *Gressitt 748, 794;* Ta Han, *Gressitt 730.*

This species is characterized by its compressed branchlets, glabrous inflorescences (axillary and terminal), and its linear-oblong leaves which are usually rounded at the apex. What was taken for this species by Gagnepain in Lecomte, Fl. Gén. Indo-Chine **2**: 810. 1920, is *S. sterrophyllum* Merr. & Perry. We have seen no material representing this species from the mainland.

41. **Syzygium kwangtungense** (Merr.) comb. nov.

*Eugenia kwangtungensis* Merr. Sunyat. **1**: 202. 1934.

KWANGTUNG, Pon-tan, Luichow, *Tsiang 2552* (type in Herb. New York Bot. Gard.); Yeungchun, *Wang 38665;* Heung Shan, Paak Shui Lam, *To 6236,* October 25, 1920: KWANGSI, Shap Man Taai Shan, Shang-sze District, *Tsiang 22664.*

In the light of the more abundant material at hand, it is evident that the description of the fruit in the original diagnosis of this species must be excluded, also the citation *Tsiang 1754.* Although the leaves of this collection are a perfect match for those of the type, *Tsiang 2552,* the mode of inflorescence is different. In the type the panicles are up to 3 cm. long, chiefly terminal (a few shorter ones in the upper axils) and usually much branched. *To 6236* is a fruiting specimen which we believe belongs to this species. The fruit is obovoid or subglobose, crowned by

the upper part of the calyx, 0.7–0.9 cm. long and 0.6–0.7 cm. in diameter; according to the field-label it is yellow; it dries reddish-brown.

42. **Syzygium euonymifolium** (Metcalf) comb. nov.

*Eugenia euonymifolia* Metcalf, Lingnan Sci. Jour. **11**: 22. 1932; Handel-Mazzetti, Beih. Bot. Centralbl. **52B**: 160. 1934.

KWANGTUNG, *Hui 8546* (*S. Y. U. 34227*), *Fenzel 103* (*S. Y. U. 8772*); Ting Wu Shan, *Tsiang 1549* (type in Herb. Arnold Arb.); North River, *Chun 7333;* North River Region, *Ko 50807;* Yung-yun City and vicinity, Wung-Yuen District, *Lau 772, 829;* Yoongyuen, *Lau 24127, 24599;* Yunfou, *Wang 37597;* Wong Chuk I and vicinity, *Lau 1965, 2383;* Yam Na Shan (Yit Nga Shan), Mei (Kaying) District, *Tsang 21304;* Ying-Tak District, *Liang 60965, 61091, Wang 531, Tsang & Wong 14247;* Wentongshan, *Tso 22111;* Kyingtung, Sunyi, *Tsiang 2615, Wang 31046.*

In this species the inflorescence shows a marked tendency to appear below the new shoots as well as being axillary. Although it seems most like the Hancei group of species, it is distinct by its pale green leaves with fairly long petioles, grayish-white branches and its mode of flowering.

43. **Syzygium Hancei** nom. nov.

*Eugenia minutiflora* Hance, Jour. Bot. **9**: 5. 1871; Forbes & Hemsl. Jour. Linn. Soc. Bot. **23**: 297. 1887; Dunn & Tutcher, Kew Bull. Add. Ser. **10**: 105. 1912; Merr. Lingnan Sci. Jour. **5**: 136. 1927; Groff, Lingnan Univ. Sci. Bull. **2**: 77. 1930; non *Syzygium minutiflorum* (Bedd.) Gamble (1919).

CHINA, without locality, *Millett s. n.*: KWANGTUNG, *S. Y. U. 6994, 53771, Wong 30, 65* (*S. Y. U. 20456, 20478*); Shui-tung, *Sampson & Hance 13754* (type in Herb. Brit. Mus.; phot.); Loh Kong Tung, Kong Tan Uen, *McClure 1748;* Tengwushan, *Liang 60321, Liou 863;* Toishan, *Tso 22525;* Kochow District, *Tsiang 906;* Canton and vicinity, *Levine 1214, 1905, Chun 40340, Li & Lam 9974;* Bo-on, *Li 9630;* Ying-Tak, Wentongshan, *Liang 60931;* Sunyi District, *Ko 51731;* Yeungkong, *Wang 38816;* Waan Lau To, *McClure 229* (*C. C. C. 7103*); Fuloshun, *Wang 523;* Shuen-Tak, *Chang 166;* Pok Lor, *Fung A-547* (*L. U. 18952*); Lofoushan, *Ko 50045*: HONGKONG, *Wang 30353, Chun 40160*: HAINAN, *Fenzel* (*S. Y. U. 17728*), *Liang 63516, 63583, 63678, 66047;* Yaichow, *Liang 63206;* Ka Chik Shan and vicinity, Ch'ang-kiang District, *Lau 2917;* Manning, *How 73872;* Tung Koo Shan and vicinity, Wen-Ch'ang District, *Fung 20353;* Mei Maan and vicinity, Mai District, *Lei 77.*

Typical *S. Hancei* is comparatively easy to identify by its very small and slightly angular flowers, which in bud are scarcely more than convex at the apex and in full bloom have very short stamens. The calyx is dark brown when dry, the leaves also are brown but not so dark. Most of the Hainan specimens cited above differ slightly in having more acuminate and slightly paler leaves than those from Kwangtung.

In addition to the material above cited, we refer the following specimens to this species, noting that the leaves are more abruptly acuminate and the venation, apart from the midrib, is rather obscure. The few-flowered inflorescences are scarcely more than half as long and slightly, if at all, branched.

HAINAN, Yaichow, *How 70310;* Dung Ka, Ma Seong Ling, *Chun & Tso 43377;* Mo San Leng, *Chun & Tso 44298;* Lingshui, *How 73799.*

44. **Syzygium Howii** sp. nov.

Arbuscula ± 2 m. alta; ramulis sulcatis, cinereis; foliis late ellipticis, 2.5–4.5 cm. longis, 1.4–2.9 cm. latis, basi obtuse acuminatis, apice obtusis vel abrupte in acumen obtusum 2–4 mm. longum contractis, supra creberrime minuteque punctatis, costa impressa, subtus consperse glanduloso-punctatis, venis primariis manifestis, utrinque 9–13, 2–3 mm. remotis, adscendentibus, vix reticulatis, in venam submarginalem confluentibus; petiolo ± 3 mm. longo; paniculis terminalibus, rachi circiter 1 cm. longa, ramulis usque ad 3 mm. longis; alabastris obconicis, sessilibus vel subsessilibus, 2.5–3 mm. longis, apice circiter 2 mm. diametro; calycibus interdum angulatis, undulatis vel truncatis, staminibus numerosis, 2–3 mm. longis, antheris circiter 0.4 mm. longis, apice minutissime glanduloso-mucronatis; fructibus ± 7 mm. longis, 6 mm. diametro, subglobosis, apice contractis et cupula calycis coronatis.

HAINAN, Po-ting, *How 73663* (type in Herb. Arnold Arb.), September 13, 1935, in forest at about 870 m. alt.

This species is closely allied to *S. Hancei* Merr. & Perry. It differs in having terminal inflorescence and larger flowers with longer stamens. It also lacks the reddish-brown color so characteristic of *S. Hancei* Merr. & Perry.

45. **Syzygium Rehderianum** sp. nov.

Arbuscula 3–5 m. alta; ramulis teretibus vel obscure compressis, fulvis; foliis ellipticis, utrinque angustatis, 4–7 cm. longis, 2–3 cm. latis, obtuse acuminatis, acumine usque ad 1 cm. longo, supra sparse punctatis, subtus glanduloso-puncticulatis, costa supra impressa, venis primariis utrinque inconspicuis 2–5 mm. remotis, vena submarginali a margine 1 mm. distante; petiolo 3–5 mm. longo; inflorescentiis axillaribus terminali-

busque, 1.5–2 cm. latis, ramulis 3–5 mm. longis, obscure tetragonis, floribus ternis sessilibus in ramulis ultimis siccis cinnamomeis, alabastris 3.5–4 mm. longis, apice 2 mm. diametro, calycibus obovoideis, truncatis vel undulatis, petalis calyptratim concretis; staminibus circiter 3.5 mm. longis, antheris minutis, stylo circiter 3 mm. longo; fructibus obovoideo-ellipsoideis vel elongato-subglobosis, ad 2 cm. longis, ± 1.5 cm. diametro.

KWANGTUNG, Tai Mo Shan, Tapu District, *Tsang 21234* (type in Herb. Arnold Arb.), July 19, 1932; Tsing Wan Shan, Wung Yuen District, *Lau 2440;* K'ei Lau Tsz, *Lau 894;* Yoongyuen, *Lau 23489;* Sunyi, *Ko 51595, Wang 38166;* Lofoushan, *Chun 41229, 41327, Tsiang 1754;* Lokcheong, *Ko 53140, Wang 31409;* Tsingyuen, *Wang 30265, 30733;* Yeungchun, *Wang 38745;* Ying-Tak, *Tso 21896;* Toishan, *Tso 22389;* Tengwushan, *Liang 60340*: KWANGSI, Pingnan, *Wang 40352;* Tou Ngok Shan (along Kwangtung border), Waitsap District, *Tsang 23188;* Ta Tze Tsuen, Yung Hsien, *Steward & Cheo 759;* Seh-feng, Dar Shan, S. Nanning, *Ching 8137;* Ta Tze Shan, *Steward & Cheo 881;* Shap Man Taai Shan, southeast of Shang-sze, *Tsang 23950;* without locality, *Ching 8396*: SZECHUAN, Lo-shan Hsien and vicinity, *Wang 23534;* without locality, *S. Y. U. 29516.*

This species differs from *E. Hancei* Merr. & Perry in both foliar and floral characters. The leaves are more abruptly acuminate with an acumen about 1 cm. long. The flower-buds are larger (3.5–4 mm. long), hemispherical at the apex and dry a yellowish- rather than a dark-brown; the stamens are longer and more conspicuous and the bracts of the inflorescence tend to be more deciduous.

The following specimens are somewhat aberrant. *Wang 23534* does not differ greatly except in having larger leaves somewhat more obtuse at either end. *Ching 8396* is a fruiting specimen with larger leaves, *Chun 9805* (*S. Y. U. 89695*) and *S. Y. U. 29516* also have larger leaves. *Steward & Cheo 881* has leaves with a shorter and practically obtuse base, the inflorescence is more compact and occasionally the branchlets approach tetragonous. *Tsiang 1754* is placed here with some hesitancy; it is very difficult to match a practically mature fruiting specimen with flowers or young fruit.

### EXCLUDED SPECIES

The following species of *Eugenia* and *Syzygium* have been credited to China or described from Chinese material by various authors. None of them belongs in either genus as we understand the limits of these two groups. Five of the binomials appertain to the genus *Decaspermum.* Two species belong in generic segregates, *Cleistocalyx* and *Acmena,* that

we believe to be entirely worthy of recognition. In both cases the several species can always be distinguished from *Eugenia* Linnaeus and from *Syzygium* Gaertner by constant characters.

CALYPTRANTHES MANGIFERIFOLIA Hance ex Walp. Ann. **2**: 629. 1852, type from Macao, thought by Hance to have been from a tree introduced from tropical America by the Portuguese = *Eugenia operculata* Roxb. = *Cleistocalyx operculatus* (Roxb.) Merr. & Perry.

EUGENIA ACUMINATISSIMA Kurz; Hemsl. Jour. Linn. Soc. Bot. **23**: 296. 1887; Dunn & Tutcher, Kew Bull. Add. Ser. **10**: 105. 1912 = *Eugenia subdecurrens* (Miq.) Merr. & Chun = *Acmena acuminatissima* (Blume) Merr. & Perry.

EUGENIA CHINENSIS Regel, Cat. Pl. Hort. Aksakov. 58. 1860, *nomen nudum*.

EUGENIA DIVARICATO-CYMOSA Hayata, Ic. Pl. Formos. **3**: 118. 1913, type from Hainan = *Eugenia operculata* Roxb. = *Cleistocalyx operculatus* (Roxb.) Merr. & Perry.

EUGENIA ESQUIROLII Lévl. Repert. Sp. Nov. **9**: 459. 1911, Fl. Kouy-Tchéou 289. 1914, type from Kweichow Province = *Decaspermum fruticosum* Forst.

EUGENIA GRACILENTA Hance, Jour. Bot. **23**: 7. 1885; Hemsl. Jour. Linn. Soc. Bot. **23**: 296. 1887; Dunn & Tutcher, Kew Bull. Add. Ser. **10**: 105. 1912, type from Kwangtung Province = *Decaspermum gracilentum* (Hance) Merr. & Perry.

EUGENIA HAINANENSIS Merr. Philip. Jour. Sci. **23**: 255. 1923, type from Hainan = *Decaspermum hainanense* Merr.

EUGENIA MULTIPUNCTATA Merr. Jour. Arnold Arb. **6**: 138. 1925, type from Hainan = *Decaspermum cambodianum* Gagnep.

EUGENIA OPERCULATA Roxb.; Hemsl. Jour. Linn. Soc. Bot. **23**: 297. 1887; Dunn & Tutcher, Kew Bull. Add. Ser. **10**: 105. 1912 = *Cleistocalyx operculatus* (Roxb.) Merr. & Perry.

EUGENIA SALIGNA sensu C. B. Rob. Philip. Jour. Sci. Bot. **4**: 392. 1909, non *Syzygium salignum* Miq.; Merr. Lingnan Sci. Jour. **5**: 137. 1927 = *Eugenia subdecurrens* (Miq.) Merr. & Chun = *Eugenia acuminatissima* Kurz = *Acmena acuminatissima* (Blume) Merr. & Perry.

EUGENIA SUBDECURRENS Merr. & Chun, Sunyat. **2**: 289. 1935 = *Eugenia acuminatissima* Kurz = *Acmena acuminatissima* (Blume) Merr. & Perry.

SYZYGIUM GRACILENTUM Hu, Jour. Arnold Arb. **5**: 232. 1924, based on *Eugenia gracilenta* Hance = *Decaspermum gracilentum* (Hance) Merr. & Perry.

SYZYGIUM NERVOSUM DC. Prodr. **3**: 260. 1828, based on *Eugenia operculata* Roxb. = *Cleistocalyx operculatus* (Roxb.) Merr. & Perry.

SYZYGIUM OPERCULATUM Niedenzu in Engl. & Prantl, Nat. Pflanzenfam. **3**(7): 85. 1893 = *Eugenia operculata* Roxb. = *Cleistocalyx operculatus* (Roxb.) Merr. & Perry.

## 12. **Cleistocalyx** Blume[1]

*Cleistocalyx* Blume (1849) differs from *Syzygium* Gaertner only in its calyptrate calyces.

A. Leaves with a short and obtuse acumen; the inflorescence axillary and terminal; the inner faces of the cotyledons concave and the hypocotyl short ..... 1. *C. conspersipunctatus*

A. Leaves acuminate; the inflorescence lateral (rarely axillary and terminal); the inner faces of the cotyledons interlocking and the hypocotyl usually extending from the center (point of attachment) to the outer surface ..... 2. *C. operculatus*

1. **Cleistocalyx conspersipunctatus** Merr. & Perry, Jour. Arnold Arb. **18**: 335. 1937.

HAINAN, without definite locality, *Wang 33524, 33687, 34214,* in mixed woods, August and September, 1933; Po-ting, *How 73248, 73332* (type); Ah Ping, *Chun & Tso 44145,* October 24, 1932, in forested ravine, about 900 m. alt.; Yaichow, *Liang 62200,* July 19, 1933, in forests. The holotype is preserved in the Arnold Arboretum herbarium.

This species is readily distinguished from *C. operculatus* (Roxb.) Merr. & Perry by the blunt leaves with short and obtuse acumen, and scattered glands sometimes large enough to be seen with the naked eye. The inflorescences are axillary and terminal; the flowers are slightly larger than those of *C. operculatus* and the fruits markedly so.

2. **Cleistocalyx operculatus** (Roxb.) Merr. & Perry, Jour. Arnold Arb. **18**: 337. 1937.

*Eugenia operculata* Roxb. Hort. Bengal. 37. 1814, *nomen nudum,* Fl. Ind. ed. 2, **2**: 486. 1832; Wight, Ic. **2**(3): 4, *t. 552.* 1843; Hemsl. Jour. Linn. Soc. Bot. **23**: 297. 1887; Dunn & Tutcher, Kew Bull. Add. Ser. **10**: 105. 1912; Koord. & Val. Atlas Baumart. Java **3**: *f. 503.* 1915; Merr. Lingnan Sci. Jour. **5**: 137. 1927.

*Syzygium nervosum* DC. Prodr. **3**: 260. 1828, Mém. Myrt. **2**: *t. 16.* 1842, excluding interpretation of genus p. 41.

*Calyptranthes mangiferifolia* Hance ex Walp. Ann. **2**: 629. 1851–52.

[1] **Merrill, E. D. and L. M. Perry.** Reinstatement and revision of Cleistocalyx Blume (including Acicalyptus A. Gray) of the Myrtaceae, Jour. Arnold Arb. **18**: 322-343, *pl. 215.* 1937. A genus of twenty-one known species extending from Chittagong, Burma, Indo-China, Hainan and southeastern China southward through Malaysia to northern Australia, Lord Howe Island, New Caledonia and Fiji.

*Syzygium nodosum* Miq. Fl. Ind. Bat. **1**(1): 447. 1855.
*Syzygium angkolanum* Miq. op. cit. 448.
*Eugenia Holtzei* F. v. Muell. Australas. Jour. Pharm. June, 1886, Bot. Centralbl. **28**: 148. 1886.
*Syzygium operculatum* Niedenzu in Engler & Prantl, Nat. Pflanzenfam. **3**(7): 85. 1893; Gamble, Fl. Madras **1**: 481. 1919.
*Eugenia clausa* C. B. Rob. Philip. Jour. Sci. Bot. **4**: 380. 1909.
*Eugenia divaricato-cymosa* Hayata, Icon. Pl. Formos. **3**: 118. 1913.

KWANGTUNG, *S. Y. U. 50364, 89693, Wang 9421* (*S. Y. U. 67781*); Canton and vicinity, *Levine 1288, 2126, Tsiang 11047;* Honam Island, *Levine 1050;* White Cloud Mountain, *Levine 3129;* Sunyi District, Weishang, *Tsiang 2721;* Ting Wu Shan, Kao-Yao District, *Tsiang 775, 1496, Liang 60737, Lau 20275;* Ying-Tak, Wentongshan, *Tso 22242;* Shi-wan-da-shan, *Tso 23371*: HONGKONG, *Bodinier 613, Wright s. n.;* North Point, *Ford s. n.*, July 29, 1895; Tai-O, New Territory, *Wang 3189;* Ma Au Shan, Shatin, *Tsiang 215;* Upper Aberdeen Road, *Gibbs* (*Herb. Hongkong 10261*): KWANGSI, Shap Man Taai Shan, *Tsang 23824;* Lungchau, *Morse 625*: HAINAN, without definite locality, *Wang 32834, 34169;* Lam Ko District, Lin Fa Shan, *Tsang 166* (*L. U. 15665*), *343* (*L. U. 17092*); Hung Mo Shan, *Tsang & Fung 458* (*L. U. 17992*); Dung Ka, *Chun & Tso 43430,* along stream at about 500 m. alt.; Yaichow, *How 70840, 71120, Liang 61996;* Yeung Ling Shan, Ngai District, *Lau 78;* Pak Shik Ling and vicinity, Ching Mai District, *Lei 697, 918;* Tai-too, Seven Finger Mountain, *Liang 61722;* Liamui (Leng Mun), *Gressitt 1165*. India and China southward through Malaysia to northern Australia.

ARNOLD ARBORETUM,
HARVARD UNIVERSITY.

# NEW OR NOTEWORTHY PLANTS FROM TEMPERATE SOUTH AMERICA

IVAN M. JOHNSTON

**Mirabilis campestris** (Griseb.), comb. nov.

*Oxybaphus campestris* Grisebach, Abhandl. K. Ges. Wiss. Göttingen **19**: 87 (1874); Heimerl, Ann. Conserv. Jard. Bot. Genève **17**: 222 (1913). *Oxybaphus ovatus* and *Mirabilis ovata* of authors.

This is the plant that has passed as *Calyxhymenia ovata* R. & P., Fl. Peru. **1**: 45, *t. 75* (1798). This latter is based upon material from west-central Peru and hence from far to the north of the area in northern Chile and western and northwestern Argentina in which *M. campestris* has been collected. The Peruvian plant does not have the leaves strongly reduced up the stem and does not have the dichotomously branched inflorescence with elongate internodes and much reduced bracts which characterize the plant of Chile and Argentina. It most suggests some of the hairy forms of *M. expansa* (R. & P.) Standley.

**Anemone cicutifolia**, sp. nov.

Herba e rhizomate tuberoso 2–5 cm. longo 3–9 mm. crasso oriens; foliis basalibus biternatis triangularibus; pinnulis secondariis profunde irregulariterque 2–3-lobatis, lobulis elongatis ascendentibus sparse ascendenterque lobulato-dentatis, supra sparse adpresse hispidulis, subtus pallidioribus secus nervos strigosis alibi saepe subglabris, margine minute ciliolatis; sinibus apertis cuneatis; petiolis foliorum inferiorum quam lamina saepe 2–3-plo longioribus; caulibus 1–2-floris 8–30 cm. longis quam foliis inferioribus saepe duplo longioribus; foliis involucri 3 pinnatifidis 2–4 cm. longis, lobis saepe 2-jugatis distantibus linearibus inferioribus non rariter lobulatis ceteris simplicibus; pedicellis 8–15 cm. longis; tepalis 9–15 mm. longis ca. 2 mm. latis oblongo-linearibus saepe 10 nervis longitudinalibus 3–5 notatis, apice rotundis, extus strigosis, intus glabris albis; staminibus 30–40; filamentis usque 3–4 mm. longis glabris; antheris oblongis ca. 0.8 mm. longis; achaeniis dense villosis valde compressis ca. 2 mm. longis et latis sessilibus; stylis obliquis ca. 0.4 mm. longis; receptaculo ca. 1 cm. longo.

ARGENTINA. T u c u m a n : Cerro del Campo, dept. Burroyaco, 2000 m., Dec. 15, 1928, *Venturi 7716* (TYPE, Gray Herb.); Est. Las

Pavas, 2900–3000 m., *Venturi 4586, 4629* (G); Tafi del Valle, 2500 m., *Venturi 2933, 2933½* (G); Cumbre del Siambon, 1700 m., *Venturi 2817* (G). Salta: Alemania, 1300 m., *Venturi 9846* (G).

Bolivia. near Sorata, 2600–2800 m., *Mandon 868* (G); Bolivian Plateau, *Bang 1041, 1923* (G).

A member of the collective species, *A. decapetala* Ard. (cf. Ulbrich, Bot. Jahrb. **37**: 259. 1906), the representative of this group in the mountains of northwestern Argentina and on the Bolivian Plateau. The species has a range detached from the other members of the group and has a characteristic aspect permitting its ready recognition. Its closest relative is probably *A. triternata* Vahl, a vernal species of low altitudes in Uruguay and eastern Argentina. From this eastern plant *A. cicutifolia* may be distinguished by its elongate stems, biternate rather than triternate basal leaves with elongate narrowly oblong rather than ovate ultimate leaf-segments, its essentially pinnate rather than digitately dissected involucral leaves, and its oblong-linear rather than lance-oblong tepals which are rounded rather than acutish at the apex.

**Margyricarpus paucijugatus**, sp. nov.

Frutex metralis debiliter armatus; ramis elongatis rectis juventate cortice pallido donatis; foliorum rhachibus in ramulorum majorum conspicuis persistentibus 0.5–1 vel rariter usque 2 cm. longis cuneatis vel subulatis, juventate apice 1–3-foliolatis margine villosis, maturitate denudatis compressis graciliter subulatis vel acutis haud vel debiliter spinescentibus fasciculos axillares foliorum saepe suffulcientibus; foliolis 1–3 glaberrimis costatis sed enervatis margine valde revolutis apice apiculatis basi obtusis vel rotundis, terminalibus 4–7 mm. longis 1–2 (–2.6) mm. latis, lateralibus paullo minoribus; sepalis 2.2 mm. longis 1 mm. latis acutis; fructibus 4–6 mm. longis axillaribus solitariis evidenter alatis haud baccatis, alis consimilibus saepe 3 crenatis usque lobulatis 1–1.5 mm. latis stramineis vel parce purpureo-tinctis, valliculis rugulosis vel inconspicue tuberculatis.

Argentina. Tucuman: Est. Las Pavas, dept. Chicligasta, 3300 m., Dec. 7, 1923, *Venturi 4664* (G). Catamarca: Cerro de Yutoyaco, dept. Andalgalá, 3500 m., Feb. 10, 1916, *Joergensen 1143* (type, Gray Herb.).

A bush with long erect branches, few leaflets, and weakly spinescent or innocuous leaf-rachises. These characters, and the lack of secondary wings between the primary ones of the fruit, distinguish *M. paucijugatus* from *M. costatus* Britton, a low shrubby plant which ranges from Catamarca and Tucuman northward to southern Peru.

**Margyricarpus inermis**, sp. nov.

Frutex prostratus vel caespitosus ramosissimus; ramulis numerosis 1–5 cm. longis glaberrimis 1–2 mm. crassis, internodiis 1–5 mm. longis; foliorum rhachibus ramulorum majorum 5–8 mm. longis infra medium late marginatis et laxe vaginatis, juventate margine villosis 3–5-foliatis, maturitate cuneatis deciduis haud spinescentibus vix conspicuis; foliolis saepe 3 terminalibus rariter imparipinnatis et bijugatis, subtus sparse villosis, margine valde revolutis, apice apiculatis basi obtusis vel cordulatis, terminalibus 3–4 mm. longis, lateralibus minoribus; sepalis 4 ovato-oblongis ca. 1.8 mm. longis et 1 mm. latis; fructibus 4–5 mm. longis axillaribus solitariis alatis haud baccatis, alis 4 integerrimis vel crenato-dentatis ca. 1 mm. latis; valliculis laevis vel non rariter alas secondarias parvas gerentibus.

ARGENTINA. Catamarca: Sierra Anconquija, 4600 m., Feb. 24, 1925, *Venturi 6633* (TYPE, U. S. Nat. Herb.); Sierra Anconquija, 4400 m., *Venturi 6360* (US). Salta: Nevado del Castillo, 4500 m., Jan. 1929, *Venturi 8540* (US).

A well marked species because of its caespitose habit, paucifoliolate leaves, non-spinescent leaf-rachises and its 4–5-winged fruit. It is probably related to *M. paucijugatus* from which it is readily separated by habit or growth, 4-winged fruit and its inconspicuous leaf-rachises.

**Margyricarpus alatus** Gillies ex Hook. & Arnott, Bot. Miscel. **3**: 305 (March 1833).

*Tetraglochin strictum* Poeppig, Frag. Syn. Pl. Chile 26 (Oct. 1833).
*Tetraglochin alatum* (Gillies) Kuntze, Rev. Gen. **3**[2]: 81 (1898).

It has been the common practice to use Poeppig's specific name for this, the most common member of its genus in central Chile and west-central Argentina. It should be noted, however, that the name published by Hooker & Arnott has at least six months priority.

**Margyricarpus caespitosus** (Phil.), comb. nov.

*Tetraglochin caespitosum* Philippi, Anal. Univ. Chile **23**: 452, 463 (1863); Linnaea **33**: 63 (1864).
*Margyricarpus microphyllus* sensu Niederlein in Lorentz & Niederlein, Bot. Exped. Rio Negro 215, *t. 6* (1881); not *T. microphyllus* Phil.!
*M. Niederleinii* Spegazzini, Rev. Agron. La Plata **3**: 513 (1897).
*M. Clarazii* Ball, Jour. Linn. Soc. Bot. **21**: 217 (1884).

The name given by Philippi to this very well marked species of Patagonia is the oldest and should be accepted.

**Lathyrus lomanus**, sp. nov.

Herba laxa e radice perenni gracili 3–5 mm. crassa profunda oriens

juventate sparse pilosa mox glabrescens; caulibus 1–2 m. longis 4-costatis usque 3–4 mm. crassis, internodiis 2–7 cm. longis; foliis unijugatis; stipulis conspicuis 1–4 cm. longis 8–24 mm. latis ovato-sagittatis asymmetricis margine paucidentatis apice acutis apiculatis sinibus clausis; petiolo 8–30 mm. longo stipulis subaequilongo vel breviore costato; cirrho quam petiolo 2–3-plo longiore saepe trifido rariter simplice; foliolis lanceolatis vel ellipticis stipulis latioribus 4–6 cm. longis 12–30 mm. latis utrinque acutis vel obtusis sub lente minute inconspicueque albo-punctulatis apice apiculatis, basi 1 mm. longe petiolulatis, subtus (in sicco) plus minusve purpurescentibus saepe villulosis, supra viridioribus saepe glabrescentibus; racemis 3–10-floris 1–2 dm. longis; pedicello florifero 2–5 cm. longo, fructifero 5–8 mm. longo; floribus 2 cm. longis; calyce 1 cm. longo sparse piloso, tubo cupulato 4 mm. profundo, lobo infero ca. 6 mm. longo subulato, lobis superioribus ca. 4 mm. longis cuneatis; corolla purpurea, vexillo glaberrimo 18–20 mm. longo apice rotundo, lamina alarum 12 mm. longa 5–6 mm. lata ca. 5 mm. longe unguiculata, carina alis conspicue breviore; ovario dense adpresseque villoso apicem versus glabro, stylo persistente 5 mm. longo supra medium compresso-clavato stigmatibus 2 distinctis notato; legumine villoso 5 cm. longo 5–6.5 mm. lato intus nitido et semina versus saepe dense villoso alibi glabro; seminibus nigris 3 mm. longis 2 mm. latis 1–1.5 mm. crassis.

CHILE: Aguada del Panul, dept. Taltal, trailing over rocks in the small steep quebrada above the water-hole, fl. purple, Dec. 4, 1925, *Johnston 5430* (TYPE, Gray Herb.).

Probably most closely related to *L. dumetorum* Phil., but very different in its purple flowers, very sparse, pale rather than fulvous indument, more deeply lobed calyx, broader thinner purplish-stained leaflets, etc.

**Adesmia Pirionii**, sp. nov.

Frutex inermis ramosissimus glanduliferus sordide villulosus; ramulis gracilibus elongatis usque 2.5 mm. crassis, juventate pilis erectis 0.6–1 mm. longis gracilibus saepe abundantibus plus minusve velutinis, cortice glandulis sessilibus minutis donato; foliis villosis et glanduliferis numerosis alternis 3–10 mm. distantibus imparipinnatis; stipulis lanceolatis 1.5–4 mm. longis 0.6–1.4 mm. latis acutis deciduis; rhachi folii 3–8 mm. longa ca. 0.3 mm. crassa supra sulcata; foliolis 3–5-jugatis rhachi longioribus oblanceolatis 8–19 mm. longis 2–4 mm. latis 1–2.5 mm. distantibus supra medium latioribus deinde basim versus gradatim attenuatis crassiusculis in sicco rugulosis perinconspicue costatis vix nervatis utrinque consimilibus glanduliferis et pilosis, basi cuneatis sessilibus, apice acutis vel abrupte breviterque acuminatis, margine revolutis; floribus secus ramulos

e axilla folii normalis orientibus solitariis 1–2 mm. longe pedicellatis; calyce 8–10 mm. longo villoso glandulifero, lobis subulatis quam tubo cupulato 2–2.5 mm. longo et crasso ca. 3-plo longioribus; vexillo corollae 10–12 mm. longo, lamina obovata 7–8 mm. lata extus glandulifera sparse pilosa 1–2 mm. longe unguiculata; carina ca. 10 mm. longa 3–3.5 mm. alta; alis carinae subaequilongis vel (0–1 mm. longe) brevioribus; ovario velutino; stylo breviter villoso; legumine biarticulato in calyce incluso; segmentis leguminis ca. 2 mm. longis 2.5 mm. latis et ca. 1 mm. crassis, latere convexis rugulosis et papillatis minute inconspicueque pubescentibus vix vel haud glanduliferis.

CHILE. Cerro de Lliu-Lliu, 800 m., a dominant shrub on one of the hills, Nov. 1929, *Father Felix Jaffuel 228* (TYPE, Gray Herb.); Lliu-Lliu, Jan. 1920, *Father Felix Jaffuel & Father Anastasio Pirion* (G); Cerro Tres Puntas near Limache, Oct. 26, 1930, *A. Garaventa 1654* (G).

This shrub appears to be an endemic in the coastal mountains, prov. Aconcagua, south of the city of Limache. It is a relative of *A. Loudonia* H. & A. differing from that species in having an indument of spreading sordid hairs, rather than being silky strigose, and in having numerous glands borne on the stems, leaves, calyx and vexillum. Its fruit is smaller than in *A. Loudonia* and, rather than surpassing the calyx-lobes, reaches barely up to their middle.

The species is named in honor of my esteemed friend, Father Anastasio Pirion, to whom I am indebted for very many specimens from various parts of Chile and particularly from the Valle de Marga Marga. This *Adesmia* comes from the slopes at the head of the valley of Marga Marga and it is eminently fitting that it should commemorate the name of Father Pirion and associate it more firmly with the region which he has made so well known to naturalists through his studies and collecting.

**Erodium chilense**, sp. nov.

Herba annua vel biennis; radice verticali subulata radiculas tenues laterales paucas gerente; caulibus pluribus laxe decumbentibus 5–15 cm. longis pauciramosis foliosis plus minusve stipitato-glandulosis cum pilis albis patentibus mollibus evidenter villosis; laminis foliorum imam ad basim palmate 5-nervatis (nervis pinnate ramosis) sparse stipitato-glandulosis adpresse villosis; petiolis conspicue patenter villosis inconspicue glanduliferis; stipulis membranaceis acutis conspicuis pallidis 5–8 mm. longis 2–3 mm. latis; foliis basalibus mox deciduis quam caulinis minoribus et minus angulatis elongatisve cordato-ovatis plus minusve trilobatis 1.7–2.3 cm. longis 1.5–1.8 cm. latis, apice rotundis, basi cordatis, margine crenato-dentatis; petiolis laminis 1.5–2-plo longiori-

bus; foliis caulinis plus minusve 5-lobatis, basi subcordatis, margine irregulariter inciso-dentatis, supremis sessilibus basi subtruncatis; margine irregulariter inciso-dentatis, supremis sessilibus basi subtruncatis; pedunculo 1–3.5 cm. longo villoso inconspicue stipitato-glandulifero petiolis conspicue longiore 3–5-floro; bracteis involucri ca. 4 late ovatis ca. 1 mm. longis obtusiusculis membranaceis villosis; pedicellis ad anthesin 5–8 mm. longis stipitato-glandulosis villosis, fructiferis paullo longioribus et saepe recurvatis; sepalis oblongis vel lanceolato-oblongis ca. 5 mm. longis 1.5 mm. latis 5-nervatis apice mucronatis extus villosis intus glabris; petalis aequalibus lilaceis sepalos vix superantibus, lamina oblongo-ovata 3 mm. longa 2 mm. lata apice rotunda basi triangulari in unguem 1 mm. longum producta; ovario strigoso; fructu 3–4 cm. longo; rostro achaenii 2.4–3.4 cm. longo villoso.

CHILE: Tocopilla, 1930–32, *Jaffuel 1056, 2540* (G); Valle de Marga Marga, 1916–1930, *Jaffuel 916, Pirion & Jaffuel 3115, 3156* (G); Valparaiso, 1895, *Buchtien* (G, mixed with *E. Botrys*); Tiltil, 1928, *Looser 739* (TYPE, Gray Herb.); Cerro de La Leona, Rancagua, 1828, *Bertero 251* (G).

This is an endemic Chilean species resembling *E. malacoides* (L.) Willd. From that European species it is distinguished by having the apical prolongation of the carpels strigose rather than glabrous, the pedicels and sepals distinctly villous rather than glandular, the leaves lacking resinous granules, and the stems less elongate. In texture, shape and size of leaves, and in the size and shape of floral parts the two species are very similar. The difference in habit of growth and in the indument is clear and well marked. The native Chilean plant can be readily separated from material of *E. malacoides* not only from the Mediterranean but also from Peru, Argentina, Uruguay and Brazil where it has been introduced. From *E. geoides* St. Hil. of Argentina, the other native *Erodium* of South America, the Chilean species can be quickly distinguished by its much smaller flowers and fruit.

**Porlieria chilensis,** sp. nov.

Frutex 1–3 m. altus; ramulis numerosis rigidis validis divaricatis haud gracilibus; foliis oppositis imparipinnatis 1.2–2 cm. longis; foliolis crassiusculis 5–7(saepe 6)-jugatis 1–2 mm. distantibus oblongis vel elliptico-oblongis, apice obtusis vel rotundis basi oblique rotundis, subtus villosulis mox subglabrescentibus, supra subglabris, utrinque cum nervis 1–2 longitudinalibus plus minusve ramosis prominulis rugulosis; rhachibus 4–10 mm. longis villosulis mox glabrescentibus; stipulis 1.5–3 mm. longis ascendentibus subulatis fragilibus inconspicuis; floribus axillaribus

solitariis in alabastro distincte tomentulosis; pedicello 4–8 mm. longo; sepalis orbiculatis 3–5 mm. latis extus villosulis; petalis 4.5 mm. longis 4 mm. latis 5 apice truncatis vel late obtusis sub apicem latioribus deinde basim versus valde angustatis et subunguiculatis; staminibus 10 glaberrimis; filamentis 5–5.5 mm. longis medium versus appendiculas oblongas obovatas gerentibus; appendiculis 1–1.5 mm. longis ca. 0.8 mm. latis inciso-lobatis, lobis linearibus ca. 0.3–0.5 mm. longis; antheris oblongis; ovario evidenter sed sparse villoso ca. 0.9 mm. longe stipitato ca. 2.5 mm. longe et lato apice stylo ca. 1 mm. longe donato; fructibus marginem versus inconspicue strigoso-villosis vel subglabris 5-lobatis brunneis; lobis 5–8 mm. longis et latis; seminibus lateraliter compressis ca. 8 mm. longis 5 mm. latis et 2.5 mm. crassis.

CHILE: Frai Jorge, prov. Coquimbo, 1925, *Werdermann 919* (TYPE Gray Herb.); Renca near Santiago, 1922, *G. Montero 64* (G); central Chile, *Cuming 274* (G); Chile, *Gay* (G).

This is the plant of central Chile, known as "Guayacan," which has passed as *P. hygrometra* R. & P. Synop. Veg. Fl. Peru. 94 (1798). When Ruiz & Pavon described *P. hygrometra* they mentioned plants from Huanuco, Peru and from Coquimbo, Chile. It is obvious from their discussion, however, that they had a greater familiarity with the Peruvian plants. Furthermore it is the northern one which they illustrated in their plate, no. 343, which was destined for the fourth and unpublished volume of their great flora. The Peruvian plant, accordingly, has properly been accepted as the typical form of *P. hygrometra*. This plant differs from *P. chilensis* in having more elongate, more numerous leaflets that are thinner and smoother and are glabrous except for a ciliolate margin. It has distinctly more slender branches, a completely glabrous ovary, and much less tomentulose buds. I can not distinguish the typical plant of central Peru from the forms of *Porlieria* found in Bolivia and northwestern Argentina and now current under the names, *P. Lorentzii* Engler and *P. arida* Rusby. These latter names I believe are synonyms of *P. hygrometra* R. & P.

**Schinus polygamus** (Cav.), comb. nov.

*Amyris polygama* Cav. Icon. **3**: 20, *t. 239* (1795).
*Schinus dependens* Ortega, Decas **8**: 102 (1798).

Since the species described and illustrated by Cavanilles is older than *S. dependens* Ortega and clear in its application there is no good reason why it should not be taken up for the common Chilean shrub of this genus. Otto Kuntze, Rev. Gen. **3**²: 45 (1898), has taken up *Schinus Huigan* Molina, Saggio 169 (1783), as a still older name for this common Chilean plant but such a procedure seems contrary to good botanical

practice. While Molina appears to have had *Schinus polygamus* in mind when he proposed the name *Schinus Huigan,* his knowledge of its characters were so very indefinite and his account of it so thoroughly confused and contradictory that the name had best be discarded. If the name is not discarded there are better reasons taxonomically for placing it in the synonymy of the Peruvian, *Schinus Molle* L., than there is for applying it to the present Chilean shrub.

The Latin diagnosis given by Molina, p. 169 and 355, is as follows, — "Schinus *Huigan* fol. pinnatis: foliolis serratis petiolatis, impari brevissimo." This certainly does not describe the Chilean *S. polygamus* which has simple oblanceolate, usually entire leaves, but does describe the Peruvian, *S. Molle.* In his discussion of the species, p. 169, Molina states that there are two sorts of "Molle" in Chile, the common *Schinus Molle* from the coastal region, and *Schinus Huigan,* the "Huigan" with "foglioline picciuolate" which grows generally in all parts of Chile. He adds that both species provide berries from which a beverage is made. I have quoted, in the original Italian, the only morphological terms used by Molina in his discussion of the species. These have commonly been translated, "folium parvum petiolatum," but they are also capable of translation as "foliolum petiolulatum" which is probably correct, since they would then agree with the Latin diagnosis which reads, "fol. pinnatis, foliolis serratis petiolatis."

In the much revised second edition of the Saggio, p. 154–5 (1810), Molina repeats the original Latin diagnosis of his *Schinus Huigan.* His discussion is completely new. He gives a copy from the description of *Amyris polygama* Cav. which he calls "Huigual," and then adds that this plant should not be confused with the "Huigan" (*Schinus Huigan*), another Chilean tree which is the same species as *Schinus Molle* or only a variety of it, and which also supplies berries used in making a beverage. He concludes with the remark that these two Chilean trees have nearly the same appearance and can be readily confused.

In his commentary on the species of Molina, Philippi, Anal. Univ. Chile **22**: 717 (1863), has suggested that Molina was attempting to distinguish the widely distributed *S. polygamus* from the plant of the coast ranges, *S. latifolius* (Gillies) Engler. This is probably correct. Molina's knowledge of the plants was obviously very vague and probably second-hand. The common name, "Molle," which is applied to all species of *Schinus,* confused him greatly. In the first edition he considered the coastal plant "*Schinus Molle.*" In the second edition he considered his *Schinus Huigan* as the same or perhaps only a variety of that Peruvian species. In both editions Molina gave a Latin diagnosis of

*S. Huigan* which can apply only to the Peruvian, *Schinus Molle*. Molina was not a naturalist but a scholastic who obviously had only a casual acquaintance with plants and was inclined toward searching for information about them in books rather than by a study of them in the fields, hills and mountains. His account of *Schinus Huigan* is evidently a conglomeration of some vague personal acquaintance with *S. polygamus*, mixed with some hearsay and some misunderstood information derived from literary sources. The "Molle" of Peru, *Schinus Molle* L., had been described by many travelers and I believe that Molina, confusing the "Molle" of Chile with the plant of Peru (in his time cultivated rarely if at all in Chile), derived his description of *S. Huigan* from some illustration or account of the Peruvian plant. If the name *S. Huigan* is not to be rejected as hopelessly confused, it must be treated, taxonomically, as a synonym of *Schinus Molle* L.

**Schinus velutinus** (Turcz.), comb. nov.

*Duvaua velutina* Turcz. Bull. Soc. Nat. Moscou **31**[1]: 467 (1858).
*Litrea Molle* Gay, Fl. Chile **2**: 45 (1846). Not *S. Molle* L.
*Schinus chilensis* Marchand, Rév. Anacard. 164 (1869).
*Duvaua molle* Bertero ex Marchand, l. c., in synonymy.
*Schinus latifolius* var. *tomentosus* Fenzl ex Engler in Martius, Fl. Brasil. **12**[2]: 389 (1876).

This is the shrub of central Chile having conspicuously hairy, usually velvety, leaves and stems. It is very different in appearance from the glabrous, and even glaucescent, *S. latifolius* (Gillies) Engler of the same region and certainly worthy of specific separation.

**Schinus piliferus**, sp. nov.

Frutex vel arbor 3–8 m. altus; ramulis inermibus vel non rariter spinescentibus subvelutinis pilis abundantibus gracilibus 0.5–1 mm. longis erectis vestitis; foliis 3–5.5 cm. longis 5–14 mm. latis saepe oblanceolatis supra medium latioribus rariter oblongo-obovatis vel oblongo-ellipticis et medium versus latioribus, margine integerrimis vel rariter supra medium sparse irregulariterque crenatis vel lobulato-dentatis, subtus pallidioribus cum nervis 5–10-jugatis saepe inconspicuis et costa infra medium pilifera (facie folii alibi glabra) rugosis, supra saepe enervatis costa infra medium non rariter pilifera notatis, apice obtusis vel rotundis rariter subacutis, basi saepe acutis, petiolo 1–2 rariter 3 mm. longo; inflorescentia 1–4 cm. longa foliis subaequilongi vel duplo breviore saepe evidenter pilulosa; pedicellis gracilibus 2–4 mm. longis alabastro globoso saepe duplo vel triplo longioribus; lobis calycis 4–5 ca. 0.5 mm. longis ovatis minute inconspicueque ciliolatis; petalis ellipticis 1.5–2 mm. longis; fructu ignoto.

ARGENTINA. Tucuman: Chañar Pozo, 300 m., *Venturi 485* (G); Siambon, 1500 m., *Venturi 10261* (G); Rio Lules, 400 m., *Venturi 2291* (G). Salta: Alemania, dept. Guachipas, slopes, 1300 m., tree 4 m. tall, Nov. 27, 1929, *Venturi 9830* (TYPE, Gray Herb.); Campo Duran, *Parodi 9171* (G); Sierra de la Candelaria, 800 m., *Venturi 9573* (G). Santiago del Estero: El Charco, 300 m., *Venturi 10113* (G). Jujuy: Rio San Francisco, 600 m., *Venturi 9735* (G).

This is the Argentine plant most closely related to *S. polygamus* of Chile. It differs from that plant in its paler, pubescent, evidently veined leaves and in its larger hairy inflorescences. In *S. piliferus* the midrib of the leaves are commonly pilose, especially on the under surface above the base. This character and its elongate usually distinctly short-hairy inflorescences distinguish the plant from all other species of the genus. The plant suggests *S. longifolius* (Lindl.) Speg. of eastern Argentina, but that is a glabrous shrub and has glomerate glabrous flowers. Among the species of western Argentina it may be readily distinguished from **Schinus fasciculatus** (Griseb.), comb. nov. (*Duvaua fasciculata* Griseb.) That is a distinctly much more spinescent shrub with short congested inflorescences and smaller leaves which are copiously hirtellous on both faces.

**Schinus gracilipes**, sp. nov.

Arbor 2–10 m. altus; ramulis gracilibus inermibus glabris vel inconspicue puberulentis; foliis ellipticis vel ovatis vel ovato-oblongis infra medium vel basim versus latioribus 3–10 cm. longis 1.5–4 cm. latis, basi obtusis vel non rariter late acutis vel subrotundis, apice obtusis, margine supra basim sinuatis, subtus pallidis glaberrimis vel perinconspicue puberulentis, nervis evidentibus saepe ca. 9–10-jugatis angulo 80°–90° a primario abeuntibus rugosis, supra viridibus saepe praesertim in costa puberulentis; petiolis gracilibus conspicuis 5–12 mm. longis supra canaliculatis; inflorescentia dimidium folium vix aequante puberulenta, bracteis ovatis ciliolatis vix 1 mm. longis, pedicellis tenuibus 3–5 mm. longis quam alabastro globoso 3–4-plo longioribus; lobis calycis 4 ovatis obtusis ciliolatis receptaculo duplo longioribus; petalis 4 ovatis virescentibus 1.5 mm. longis quam lobis calycis duplo longioribus; drupis globosis 6 mm. diametro, exocarpio lilacino nitido, meriocarpio valde resinoso.

ARGENTINA. Tucuman: El Cadillal, 600 m., *Venturi 5386* (G); Tapia, 750 m., Aug. 29, 1925, *Venturi 3887* (TYPE, Gray Herb.); Cerro de Taficillo, 1600 m., *Venturi 9996* (G); Tafi del Valle, 2500 m., *Venturi 2944* (G). Catamarca: El Sancho, 2500 m., Sept. 11,

1915, *Joergensen 991* (G). Salta: Sierra de la Candelaria, 1700 m., *Venturi 9571* (G).

This is the Argentine tree treated by Grisebach, Engler and others as *S. latifolius* (Gillies) Engler. That Chilean plant, however, is more glabrescent and has toothed leaves and very conspicuously shorter pedicels and much larger flowers. The Chilean and Argentine species are clearly distinct.

**Schinus bumelioides**, sp. nov.

Frutex vel arbor 1–10 m. altus; ramulis rigidis divaricatis spinescentibus cortice pallido glabro donatis; foliis glabris ellipticis vel oblongis 2–4 cm. longis 9–18 mm. latis medium versus vel paullo infra medium latioribus, apice obtusis vel rotundis, basi saepe rotundis vel obtusis sed rariter plus minusve acutis, margine integerrimis, subtus pallidis, nervis 6–8-jugatis inconspicue notatis, supra viridibus; petiolis 5–8 mm. longis rigidis gracilibus; inflorescentia glomerata petiolum paullo superante subglabra, bracteis ca. 0.5 mm. longis; pedicellis 2–3 mm. longis quam alabastro globoso 1–2-plo longioribus; lobis calycis 5 ovatis ca. 0.5 mm. longis inconspicue ciliolatis; petalis 5 obovatis ca. 2 mm. longis; fructu ignoto.

ARGENTINA. Tucuman: Tapia, 700 m., Aug. 18, 1929, *Venturi 9422* (TYPE, Gray Herb.); Rio Sali, 450 m., *Venturi 882* (G); Barranca Colorada 500–550 m., *Venturi 3530, 3800* and *5281* (G). Catamarca: Andalgalá, Sept. 9, 1915, *Joergensen 990* in pt. (G); dept. El Alto, 1250 m., *Venturi 7063* (G). Salta: Agua Caliente, 1000 m., *Venturi 5494* (G); Los Baños, 900 m., *Venturi 9330* (G). Jujuy: Sierra de Calilegua, dept. Ledesma, 700 m., *Venturi 5311* (G).

This is a relative of *S. sinuatus* (Griseb.) Engler, *S. spinosus* Engler, and *S. ferox* Hassler. Its entire-margined, elliptic or oblong leaves, slender petioles, and glabrous surfaces distinguish it from these relatives. *Schinus praecox* (Griseb.) Speg. is a very different plant with small spathulate leaves, 1–2 cm. long and 3–6 mm. broad.

**Schinus microphyllus**, sp. nov.

Frutex ca. 2 m. altus; ramulis divaricatis rigidis spinescentibus pilis minutis erectis abundantibus vestitis; foliis ellipticis vel obovatis 8–18 mm. longis 6–10 mm. latis, medium versus vel paullo supra medium latioribus puberulentis, margine integris vel sparse sinuato-dentatis, apice obtusis, basi obtusis vel acutis, subtus pallidioribus, nervis utrinque 1–3 prominulis; petiolis 1–3 mm. longis puberulentis supra canaliculatis; inflorescentia folio saepe aequilonga vel duplo longiore, rhachi 1–2 cm. longa pilis minutis erectis abundantibus vestita; pedicellis ca. 5 mm.

longis gracilibus alabastro globoso 3–4-plo longioribus; petalis 5 suborbicularibus virescentibus 2 mm. longis quam lobis calycis ovatis rotundis 3–4-plo longioribus; staminibus ca. 1 mm. longis; fructu ignoto.

PERU: above Argama, on trail to Andahuaylas, dept. Apurimac, roadsides and gulches, shrub 2 m. tall, fl. greenish, 3800 m., Nov. 5, 1935, *West 3747* (TYPE, Gray Herb.); Dept. Apurimac, 2500–2600 m., *Weberbauer 5839* (G).

A spinescent shrub most closely related to *S. andinus* of the Bolivian Plateau. It differs from that more southern species in its decidedly pungent branchlets, its distinctly pubescent (almost velvety) stems, its dull puberulent rather than lustrous upper leaf-surfaces, and its much more slender, longer, hairy inflorescences.

**Schinus andinus** (Engler), comb. nov.

*Schinus dependens* var. *andinus* Engler, in DC. Monog. Phanerog. **4**: 341 (1883).

BOLIVIA: Calderillo, 3300 m., *Fiebrig 2477* (G); Songo, *Bang 895* (G); near La Paz, 3000 m., *Bang 160* (G); near Sorata, 2650–2800 m., *Mandon 768* (G).

PERU: Tambo, dept. Ayacucho, 3100–3200 m., *Weberbauer 5552* (G).

This plant of the plateau is related to *S. microphylla* Johnston and to *S. longifolia* (Lindl.) Speg. From the latter, which ranges at low altitudes from eastern Bolivia to eastern Argentina and southern Brazil, it differs conspicuously in the smaller, proportionately much broader, leaves that have a sinuate margin and much fewer (1–3) pairs of obscure veins.

**Cristaria adenophora,** sp. nov.

Herba annua e radice crassa lignosa tortuosa oriens pallide viridis; caulibus pluribus ascendentibus usque 2 dm. vel ultra longioribus 2.5–5 mm. crassis laxe ramosis pilis simplicibus glanduliferis vestitis, internodiis paucis 2–5 cm. longis; foliis paucis; petiolo gracili laminae foliorum superiorum subaequilongo, inferiorum quam lamina subduplolongiori subtereti striato pilis simplicibus glanduliferis conspicue vestito; lamina ambitu ovatis vel late ovatis foliorum supra medium caulis gestorum maxima 2–3 cm. longa latitudine (1.8–3 cm. lata) longitudinem subaequante vel ea paullo breviori pilis stellatis (supra abundantibus velutinis; subtus sparcioribus) vestita et pilis simplicibus glanduliferis (praesertim supra) sparsis inconspicuis instructa breviter lateque (utrinque 5 mm. profunde) trilobata vel irregulariter 1–3 mm. profundeque lobulato-dentata, lobulis et lobis utrinque 1–5 integris apice saepe rotundis

vel obtusis; cymulis axillaribus subsessilibus vel usque 5 mm. longe pedunculatis; pedicellis floriferis 5–10 mm. longis gracilibus pilis glanduliferis simplicibus flavescentibus obtectis; calyce pilis stellatis longe graciliterque ramosis abundantibus villoso haud vel sparsissime glandulifero 5 mm. longo, lobis lanceolatis acutis 4 mm. longis basi imo usque 2 mm. latis; petalis purpureo-rubris ca. 9 mm. longis quam calycis lobis duplo longioribus; ovario glabro fructu 6 mm. diametro glaberrimo depresso alis exclusis 2 mm. alto alis lanceo-ovatis 2 mm. altis 1 mm. latis.

CHILE: Potrerillos, prov. Atacama, 2900 m., on golf-course, fl. magenta, March 25, 1933, *M. O'C. Greninger 18* (TYPE, Gray Herb.; ISOTYPE, Stanford University).

Evidently related to *C. glomerulata* Johnston, which also came from the golf course at Potrerillos Mine. This new species, however, is a coarser plant with fewer flowers, larger petals, much more hairy larger calyces, and much more broadly and sparsely lobed velvety leaves which are practically devoid of glandular hairs. The lower leaves of *C. adenophora* have much smaller blades and a proportionately longer petiole than do the middle and upper ones. The lower leaves of *C. glomerulata* are the largest and the whole plant is sordid and dark with glands and glandular secretions. In the new species the stems, petioles and pedicels are brown or tawny because of the glands, but the calyx and leaf-blades are clean and lighter color because of the lack of them.

**Palaua mollendoensis** (Ulbr.), comb. nov.

*Malvastrum mollendoense* Ulbrich, Bot. Jahrb. **42**: 120 (1908).

This remarkable species has a habit more in agreement with *Palaua* than with *Malvastrum*. In its technical characters, the "carpels" being in two incomplete superimposed series, it clearly belongs to the former genus.

**Nototriche diminutiva** (Phil.), comb. nov.

*Malva diminutiva* Phil. Cat. Pl. Itin. Tarapaca 8 (1891).
*Malvastrum diminutivum* (Phil.) Baker, Jour. Bot. **32**: 36 (1894).
*Nototriche nana* Hill, Kew Bull. **1928**: 19 (1928).

I have compared authentic material of *Malva diminutiva* with some of *Nototriche nana*. The species are unquestionably conspecific.

**Azara petiolaris** (Don), comb. nov.

*Quillaja petiolaris* Don, Edinburgh New Phils. Jour. **12**: 110 (Oct.-Dec. 1831).
*Azara Gilliesii* Hook. & Arnott, Bot. Miscel. **3**: 144 (Aug. 1832).

The original description of Don's species is as follows, — "Q. *petiolaris*, foliis longe petiolatis ovalibus dentatis subserratis. *Hab.* In Chili.

*D. Cuming* (V. s. sp. in Herb. Lamb.). *Folia* ovalia, dentata, subserrata, glabra, nitida sesqui v. bipollicaria. *Petioli* fere unciales. *Stipulae* parvae, caducae. *Flores* nondum vidi. *Obs.* Maxime affinis Q. saponariae, sed abunde diversa petiolis 6-plo longioribus." The sterile specimens described represent the plant generally known as *Azara Gilliesii* H. & A., as was long ago indicated by the authors of that species, Bot. Miscel. **3**: 305 (March 1833). Don's specific name, having priority, must become the accepted one for this well known tree of central Chile.

**Argylia checoensis** (Meyen), comb. nov.

*Oxalis checoensis* Meyen, Reise **1**: 406 (1834); Kunth in Engler, Pflanzenr. IV. **130**[Heft 95]: 216, fig. 18a-e (1930).
*Argylia geranioides* DC. Prodr. **9**: 235 (1845).

The type of *Oxalis checoensis* is labeled as collected near Copiapó at 3–4000 ft. The specific name, however, almost certainly refers to Mina de Checo, a mine in the hills southeast from Tierra Amarilla which was visited by Meyen. The plant represented is a form of *Argylia geranioides* DC. of the Bignoniaceae, and, indeed, is older than that species. In his recent monograph of *Oxalis*, Kunth, l. c., accepted Meyen's species as an *Oxalis* and erected a section for it.

**Psilocarphus Berteri**, nom. nov.

*Micropus globiferus* DC. Prodr. **5**: 460 (1840), not *P. globiferus* Nutt. (1840).
*Psilocarphus globuliferus* (DC.) Spegazzini, Anal. Soc. Cient. Argentina **48**: 330 (1899).
*Micropus globuliferus* DC. ex Speg, l. c. lapsu calami; pro synon.

CHILE: near Coquimbo, 1856, *Harvey* (G); Coquimbo, 1931, *Jaffuel 2682* (G); Coquimbo 1934, *Montero 1884* (G); Tiltil, rather dry sandy places somewhat shaded by shrubs, 700 m., 1927, *Montero 141* (G); Tiltil, 700 m., *Looser 742* (G); Cerro Cruz, Limache, 1931, *Garaventa* (G); Valle de Marga Marga, 250 m., 1929–33, *Jaffuel & Pirion 240, 2999* and *3091* (G); Rancagua, 1833, *Bertero 433* (G, photo. of type).

The name proposed above is based entirely upon *Micropus globiferus* DC. and so upon the plant collected by Bertero, no. 433, near Rancagua, Chile. It thus applies to that one of the two Chilean species of the genus which is most closely related to *P. tenellus* Nutt. of California, and which is separated from *P. chilensis* (Remy) Meigen by having an arachnoid indument which is frequently deciduous on the old leaves, and by having smaller heads which are surrounded and usually hidden by numerous broadly oblong obtusish involucral leaves. There are indications that this plant frequents drier and better drained soils than its relative, *P. chilensis*. As now known it is a plant endemic to central Chile.

This species of Chile was the first of its genus to be described. It has remained, however, poorly understood and its name has been given a great variety of applications. Much of the confusion enveloping it began when Nuttall, Trans. Am. Philos. Soc. **7**: 340 (1840), established the genus *Psilocarphus* and published the name, *Psilocarphus globiferus*. This latter has been variously interpreted, either as a new Californian species based upon material collected at Santa Barbara by Nuttall, or as a nomenclatorial transfer based upon *Micropus globiferus* DC. and hence upon the Chilean plant collected by Bertero. Though formerly thought to be conspecific, we now know that the plant collected by Nuttall and Bertero are distinct species. Only one of these two species can bear the name, *Psilocarphus globiferus*. Gray, Proc. Amer. Acad. **8**: 652 (1873) and Synop. Fl. $1^2$: 228 (1878), first treated *P. globiferus* Nutt. as based upon *M. globiferus* DC. and hence as applicable to the Chilean plant. Later, however, Synop. Fl. $1^2$: suppl. 448 (1887), he applied Nuttall's binomial to the Californian endemic. This treatment has since generally prevailed. Recently, however, Cabrera, Revista Chilena Hist. Nat. **40**: 230 (1936), has sponsored the name, "*Psilocarphus globiferus* (Bert.) Nutt." and has applied it to plants of California, Argentina and Chile. A consideration of the details attending the publication of Nuttall's binomial shows this to be incorrect.

When Nuttall published his binomial he preceded the trivial epithet by an asterisk, "*Psilocarphus *globiferus,*" he gave a description of the Californian plant, and finally he cited the following reference, "*Micropus globiferus* ? Decand." A study of Nuttall's publication will show that he placed the asterisk before generic names or species names when these were newly proposed new genera or new species. He did not place an asterisk beside specific names that had been transferred from another genus. This well known practice of Nuttall, and the fact that he cited the name, *Micropus globiferus* DC., with a question mark, is clear indication that he was publishing an independent species and one not identified with DeCandolle's Chilean species nor taxonomically based upon it. The name *Psilocarphus globiferus* Nutt., accordingly, should be applied only to the plant of southern California which Nuttall collected near Santa Barbara. Since Nuttall's species bears a name preoccupying the epithet "*globiferus,*" a new specific epithet under *Psilocarphus* is accordingly needed for the Chilean plant described as *Micropus globiferus* DC. The Chilean plant may be called, *Psilocarphus Berteri*.

**Psilocarphus chilensis** (Remy) Meigen, Bot. Jahrb. **17**: 281 (1893); Reiche, Anal. Univ. Chile **111**: 186 (1902) and Fl. Chile **4**: 36 (1905).

*Bezanilla chilensis* Remy in Gay, Fl. Chile **4**: 110, *t. 46* (1849).

CHILE: between Frai Jorge and Ovalle, 300 m., 1925, *Werdermann 927* (G); Batuco, 500 m., 1936, *Looser 3637, 3648* (G); Batuco, 1932, *Jaffuel 1781* (G).

ARGENTINA: ?? Tehuelchel, 300 m., 1929, *Donat 118* (G).

This plant is much coarser than *P. Berteri* and is enveloped in a very loose woolly tomentum and has very elongate involucral leaves which do not obscure the head. It is very much more closely related to the true *P. globiferus* Nutt. of California than to *P. Berteri* of Chile. The material from Patagonia which I have cited seems to be conspecific with that from Chile. In any case it is closely related to *P. chilensis* and can not be referred to *P. Berteri.* Cabrera, Revista Chilena Hist. Nat. **40**: 231 (1936), cited four other collections from Patagonia as conspecific with two Chilean collections of *P. chilensis* (from Batuco) and a Californian collection of true *P. globiferus* (from La Verne). He appears to have had no collections of *P. Berteri.*

When Remy proposed *Bezanilla chilensis,* he cited *Micropus globiferus* DC. as a synonym. His plate, however, seems to be a representation of the present species and his description applies best to it also. I believe that his species can be used in the sense I have here adopted.

ARNOLD ARBORETUM,
HARVARD UNIVERSITY.

# NEW SPECIES, VARIETIES AND COMBINATIONS FROM THE COLLECTIONS OF THE ARNOLD ARBORETUM

ALFRED REHDER

**Ulmus laevis** Pall. var. **celtidea** (Rogov.), comb. nov.

*Ulmus glabra* sensu Trautvetter in Bull. Phys.-Math. Acad. Sci. St. Petersb. **15**: 375 (1857), non Hudson, nec Miller, teste Litvinof.

*Ulmus pedunculata* Foug. var. *celtidea* Rogovitch, Obozr. Rast. Fl. Kiefsk. Uchebn. Okr. 533 (1869). — Koeppen, Geog. Verbr. Holzgew. Eur. Russ. **2**: 33 (Beitr. Kenntn. Russ. Reich. ser. 3, VI) (1889). — Schmalhausen, Fl. Sredn. Iuzhn. Ross. **2**: 533 (1897). — Chitrovo in Izv. Obtch. Uzcl. Orl. Gub. **1**: 50, t. 1 (1907). — Elwes & Henry, Trees Gt. Brit. Irel. **7**: 1852 (1913).

*Ulmus celtidea* Litvinof in Schedae Herb. Fl. Ross. **6**: 167 (1908).

*Ulmus celtidea* f. *glabra* Litvinof, l. c.

This variety differs from the type chiefly in the oblong-lanceolate small leaves gradually narrowed into a slender acumen, broadly cuneate at the base, and coarsely and sharply doubly serrate, glabrous beneath or slightly pubescent, also in the fewer (usually 5–6) stamens and in the smaller fruit with upright tips. Litvinof raised it to specific rank but the characters by which it is distinguished do not seem to be sufficient for specific separation. A tree of this variety, received in 1910 at this Arboretum from the nursery of Regel and Kesselring at St. Petersburg, proved to be typical *U. laevis;* this agrees with the experience recorded by Henry (in Elwes & Henry, Trees Gt. Brit. Irel. **7**: 1852. 1913).

**Ulmus laevis** var. **celtidea** f. **pilosa** (Litv.), comb. nov.

*Ulmus celtidea* f. *pilosa* Litvinof in Schedae Herb. Fl. Ross. **6**: 168 (1908).

The type of this form was collected May 2 and 26, 1906 by W. Chitrovo in the province of "Orel, distr. Briansk. Ad ripas fl. Desna pr. lac. Orechewoje." This form of which there is a duplicate of the type specimen in this herbarium, differs from the typical *celtidea* in the pilose young branchlets and petioles and the scabrid leaves up to 10 cm. long.

**Ulmus glabra** Huds. f. **exoniensis** (K. Koch), comb. nov.

*Ulmus montana* var. 9. *fastigiata* Hort. ex Loudon, Arb. Frut. Brit. **3**: 1399 (1838). — Henry in Elwes & Henry, Trees Gt. Brit. Irel. **7**: 1866 (1913).

*Ulmus glabra replicata* Hort. Dur. ex Loudon, l. c. (1838), pro synon. praeced.

*Ulmus Fordii* Hort. ex Loudon, l. c. (1838), pro synon. *U. m.* var. *fastigiatae.*

*Ulmus exoniensis* Hort. ex Loudon, l. c. (1838), pro synon. *U. m.* var. *fastigiatae.*

*Ulmus scabra* g) *U. exoniensis* Hort. ex K. Koch, Dendr. $2^1$: 416 (1872).

*Ulmus exoniensis* K. Koch in Wochenschr. Ver. Bef. Gartenb. Preuss. **15**: 150 (1872).

*Ulmus montana* a. *genuina* 2. *exoniensis* Boulger in Gard. Chron. n. ser. **12**: 298 (1879).

*Ulmus scabra* Mill. a. *pyramidalis* sensu Dippel, Handb. Laubholzk. **2**: 28 (1892) tantum quoad syn. *"fastigiata, exoniensis;"* non *U. scabra* c) *U. pyramidalis* K. Koch (1872).

*Ulmus scabra* var. *fastigiata* (Loud.) Rehder in Bailey, Cycl. Am. Hort. **4**: 1881 (1902). — Schneider, Ill. Handb. Laubholzk. **1**: 218 (1904).

*Ulmus scabra* I. *typica* 1. *genuina* lus. *fastigiata* (Schneid.) Ascherson & Graebner, Syn. Mitteleur. Fl. **4**: 563 (1911).

*Ulmus glabra* f. *fastigiata* (Loud.) Rehder in Mitt. Deutsch. Dendr. Ges. **24**(1915): 216 (1916); in Bailey, Stand. Cycl. Hort. **6**: 3410 (1917), pro var.; non Dippel.

Though "fastigiata" is the oldest varietal name of this form, it cannot be used on account of the older homonym *U. glabra fastigiata* Kirchn. which is a synonym of *U. carpinifolia* var. *cornubiensis.* The next oldest legitimate varietal epithet is apparently "exoniensis" in *U. montana* a. *genuina* 2 *exoniensis* Boulger, if *U. scabra* f. *U. exoniensis* Hort. ex K. Koch (l. c.) is ruled out as an illegitimate combination, though Koch validates here the epithet "exoniensis" by a good description.

Dippel cites K. Koch as the author of his *U. scabra* a. *pyramidalis,* but Koch's *U. scabra* c. *U. pyramidalis* does not belong here, since he describes the leaves as smooth above, similar to those of *U. tiliaefolia* Host which belongs to *U. carpinifolia.* Koch's variety may be referable to *U. carpinifolia* var. *cornubiensis,* since he states that it has the habit of a Lombardy poplar.

**Ulmus glabra** f. **monstrosa** (Schneid.), comb. nov.

*Ulmus montana monstrosa* Hort. ex Schelle, in Beissner, Schelle & Zabel, Handb. Laubholz-Ben. 87 (1903), nomen.

*Ulmus scabra* var. e. *nana* f. *monstrosa* Schneider, Ill. Handb. Laubholzk. **1**: 218 (1904).

*Ulmus scabra* I. *typica* 1. *genuina* m. *monstrosa* (Schneid.) Ascherson & Graebner, Syn. Mitteleur. Fl. **4**: 562 (1911).

A compact shrub often with fasciated branches and leaves 5–8 cm. long, partly pitcher-shaped at base and on a slender petiole to 2.5 cm. long.

**Ulmus carpinifolia** Gleditsch, Pflanzenverz. 354 (1773). — Rupp. ex Suckow, Oek. Bot. 40 (1777). — Borkhausen, Vers. Forstbot. Beschr. Holzart. 35 (1790); Theor.-Prakt. Handb. Forstbot. **1**: 839 (1800). — Schkuhr, Handb. **1**: 176 (1808). — Lindley, Syn. Brit. Fl. 226 (1829).[1] — Druce, Brit. Pl. List, ed. 2, p. 103 (1928); Comital Fl. Brit. Isles, 266 (1932).

*Ulmus campestris* Linnaeus, Sp. Pl. 225 (1735), pro parte.

*Ulmus glabra* Miller, Gard. Dict. ed. 8 (1768), non Huds. (1762), *"glabris."*

*Ulmus sativa* Du Roi, Harbk. Baumz. **2**: 502 (1772), non Miller (1768).

*Ulmus campestris* var. *glabra* Aiton, Hort. Kew **1**: 319 (1789).

*Ulmus nuda* Ehrhart, Beitr. **6**: 86 (1791), pro parte.

*Ulmus foliacea* Gilibert, Exerc. Phytol. **2**: 395 (1792). — Schneider in Oester. Bot. Zeitschr. **66**: 79 (1916). — Rehder in Bailey, Stand. Cycl. Hort. **6**: 3412 (1917). — Johanson in Svensk Bot. Tidskr. **15**: 8 (1921); in Lustgaard **5**: 62 (1924); in Bot. Notis. **1932**: 200. — Hayek, Prodr. Fl. Penins. Balc. **1**: 91 (1924). — Rehder, Man. Cult. Trees Shrubs, 188 (1927).

*Ulmus campestris* β. *U. carpinifolia* Rupp. ex Suckow, Anfangsgr. Theor. Angew. Bot. **2**: 138 (1786). — Borkhausen in Rhein. Mag. Naturk. **1**: 498 (1793). — Kittel, Taschenb. Fl. Deutschl. ed. 3, **1**: 276 (1853).

*Ulmus nitens* Moench, Meth. 333 (1794). — Henry in Henry & Elwes, Trees Gt. Brit. Irel. **7**: 1894 (1913). — Moss, Cambridge Brit. Fl. **1**: 89 (1914). — Lynch in Jour. Roy. Hort. Soc. **41**: 16, f. 11 (1915). — Rehder in Mitt. Deutsch. Dendr. Ges. **24** (1915): 218 (1916). — Stern in Jour. Bot. 70, suppl. p. 21 (1932). — Turrill in Kew Bull. **1933**: 232.

*Ulmus surculosa* var. *glabra* Stokes, Bot. Mat. Med. **2**: 37 (1812).

? *Ulmus reticulata* β. ? *sepearia* Dumortier, Fl. Belg. 25 (1827), pro parte.

*Ulmus campestris* Spielart b. *carpinifolia* G. F. W. Meyer, Chloris Hann. 80 (1836).

*Ulmus campestris* α. *nuda* Koch, Syn. Fl. Germ. 637 (1837), pro parte.

*Ulmus campestris* var. *laevis* Spach in Ann. Sci. Nat. sér. 2, **15**: 362 (1841). — Planchon in Ann. Sci. Nat. sér. 3, **9**: 273 (1848).

*Ulmus campestris* var. γ. *Orme glabre* Mathieu, Fl. For. 194 (1858) "synon: *U. nitens* Moench, *U. carpinifolia* Ehrh."

*Ulmus suberosa* var. *glabra* Syme in Sowerby, Engl. Bot. ed. 3, **8**: 138 (1868).

*Ulmus campestris* c. *laevis* 1. *carpinifolia* (Lindl.) Boulger in Gard. Chron. n. ser. **12**: 298 (1879).

*Ulmus glabra* α. *typica* f. 1. *carpinifolia* Pospichal, Fl. Oester. Küstenl. **1**: 347 (1897).

*Ulmus sativa* Mill. g. *carpinifolia* (Lindl.) Druce, List Brit. Pl. 63 (1908).

[1]According to Moss, Cambridge Brit. Fl. **2**: 89 (1914), *U. carpinifolia* Lindl. represents *U. glabra* × *nitens*.

*Ulmus vulgaris* var. *carpinifolia* (Math. & Fl.) Rouy, Fl. France, **12**: 266 (1910).

*Ulmus campestris* a. *glabra* 3. *carpinifolia* Ascherson & Graebner, Syn. Mitteleur. Fl. **4**: 555 (1911).

For additional citation of literature see Schneider in Oester. Bot. Zeitschr. **66**: 79 (1916) and Stearn in Jour. Bot. **70**: suppl. p. 21 (1932).

The species under discussion was included by Linnaeus and many later authors in the species *U. campestris,* a name now proposed as a *nomen ambiguum rejiciendum,*[1] a proposal which will doubtless be accepted by the next International Botanical Congress. In dividing the Linnean concept of *U. campestris* into several species, the name *U. campestris* was kept by most English authors for the English elm, *U. procera* Salisb., while most botanists of continental Europe applied it to the species under discussion which is the elm most widely distributed in Europe. During the past twenty-five years various botanists, abandoning the name *U. campestris* as of uncertain application, have used three different names for the species here called *U. carpinifolia,* namely *U. glabra* Mill., *U. foliacea* Gilib. and *U. nitens* Moench. The first of these names is invalidated by the earlier homonym *U. glabra* Huds. which is the valid name for the species known also as *U. scabra* Mill. and *U. montana* Stokes. The second name is also an illegitimate name, since it is evidently a renaming of *U. campestris* L. without any attempt to separate it as a distinct species from the Linnean *U. campestris* which is quoted simply as a synonym. Gilibert states clearly in the preface that he has changed such Linnean names which seemed meaningless to him; he says (p. xliv): "mea nomina trivalia feci, quae attributi plantae adhaerentis et sensibilis ideam excitant; arbitraria plurima nihil significantia, desumpta a statione, viribus, etc. repudiavi." The third name *U. nitens* Moench, is also a renaming of a species already described under the name *U. carpinifolia* cited by Moench as a synonym and credited by him to Ehrhart, but I have not been able to find mention of this name in Ehrhart's works. Evidently *U. carpinifolia* Gleditsch (1773) is the oldest available name applicable to this species; it is based on "Ulmus carpini folio seu cortice arboris albido" of Ruppius Fl. Jen. ed. Haller. 330 (1745), as is clearly shown by the citation under *U. carpini folio*[2] in Gleditsch, Syst. Einleit. Forstwiss. **1**: 240 (1775) where Ruppius is cited. The brief description in German, of which that of *U. nitens* by Moench is hardly superior, and

[1] cf. Sprague & Green in Kew Bull. **1933**: 503; see also Suringar in Mitteil. Deutsch. Dendr. Ges. **41**: 39-41 (1929), and Kew Bull. **1935**: 74.

[2] In his Systematische Einleitung Gleditsch still retains the prelinnean names, while in his Pflanzenverzeichniss published two years earlier he had already adopted Linnean binomial nomenclature.

the comparison with the other species described indicates clearly the species Gleditsch had in mind, though the Latin phrases added apparently only as synonyms are contradictory and do not apply to the same species. The description by Suckow (1777 and 1786) who credits the species to Ruppius, refers only to the whitish bark. Borkhausen (1790) enumerates it as *U. carpinifolia* Gleditsch and says that it differs from *U. campestris* only in the smoother grayish or whitish bark and somewhat smaller leaves. As appears from the synonymy given above, the name *U. carpinifolia* has been used by several later authors for the species and has been employed as the name of a subdivision of a binomial by Suckow (1786), Borkhausen (1793), by G. F. W. Meyer (1836), Kittel (1853), Boulger (1879), Pospichal (1897), Druce (1908), Rouy (1910), Ascherson & Graebner (1911) and Moss (1914). By Moench (1794) it is cited as a synonym of his *U. nitens*, by Spach (1841) and by Planchon (1848) as a synonym of *U. campestris* var. *laevis*, by Koch (1837) as a synonym of his *U. campestris* a. *glabra*, by Mathieu (1858) as a synonym of his *U. campestris* var. γ. by Borbas (Bekesvarm. Fl. 55. 1881) under *U. glabra* and by Schneider (1916) as a synonym of *U. foliacea*.

As *Ulmus carpinifolia* appears to be the oldest and only valid name applicable to the species under discussion, the following new combinations become necessary.

**Ulmus carpinifolia** f. **variegata** (Dum. Cours.), comb. nov.

*Ulmus campestris* var. *U. glabra variegata* Dumont de Courset, Bot. Cult. ed. 2, **6**: 384 (1811).

*Ulmus glabra* 9. *variegata* Loudon, Arb. Frut. Brit. **3**: 1405 (1838).

*Ulmus nitens* var. *variegata* (Dum. Cours.) Henry in Elwes & Henry, Trees, Gt. Brit. Irel. **7**: 1895 (1913).

*Ulmus foliacea* var. *variegata* Rehder in Stand. Cycl. Hort. **6**: 3413 (1917).

A form with the leaves variegated with white.

None of the names of variegated forms given by Weston, Bot. Univ. **1**: 314–315 (1770) can be applied with certainty to this form of the smooth-leaved elm, since none of his three species of English elms can be identified with this species; his *U. campestris* represents the English elm, *U. glabra* the Wych elm which is *U. glabra* Huds., not Mill., and *U. hollandica* is the Dutch elm.

**Ulmus carpinifolia** f. **pendula** (Schneid.), comb. nov.

*Ulmus campestris* f. *pendula* Dippel, Handb. Laubholzk. **2**: 24 (1892), non David, nec Kuntze.

*Ulmus glabra* var. d. *pendula* (Dipp.) Schneider, Ill. Handb. Laubholzk. **1**: 220 (1904), pro parte.

*Ulmus glabra* var. d. *pendula* f. *Wentworthii* Schneider, l. c. (1904).
*Ulmus campestris* a. glabra α. *vulgaris* 1. *pendula* (Dipp.) Ascherson & Graebn. Syn. Mitteleur. Fl. **4**: 554 (1911).
*Ulmus campestris* var. *pendula* Rehder in Bailey, Cycl. Am. Hort. **4**: 1882 (1902).
*Ulmus nitens* var. *pendula* (Rehd.) Henry in Elwes & Henry, Trees Gt. Brit. Irel. **7**: 1893 (1913).
*Ulmus foliacea* var. *pendula* Rehder in Bailey, Stand. Cycl. Hort. **6**: 3413 (1917).

A form with pendulous branches. The plant described as *U. campestris pendula* David in Rev. Hort. sér. 2, **4**: 101 (1845) seems to belong according to the description either to *U. pumila* L. or *U. parvifolia* Jacq., and *U. campestris* 4b. *pendula* Kuntze, Taschenfl. Leipzig, 214 (1867) is probably *U. glabra* f. *pendula* (Loud.) Rehd.

**Ulmus carpinifolia** f. **tiliaefolia** (Host), comb. nov.

*Ulmus tiliaefolia* Host, Fl. Austr. **1**: 329 (1827).
*Ulmus glabra* f. *tiliaefolia* Borbas, Békésvarm. Fl. 55 (1881).
*Ulmus glabra* var. a. *typica* f. *tiliaefolia* (Host.) Schneider, Ill. Handb. Laubholzk. **1**: 220 (1904).
*Ulmus campestris* a. *glabra* 1. *tiliaefolia* (Host) Ascherson & Graebner, Syn. Mitteleur. Fl. **4**: 555 (1911).

A form with ovate leaves rounded or subcordate and usually not strongly oblique at the base.

**Ulmus carpinifolia** f. **betulaefolia** (Loud.), comb. nov.

*Ulmus campestris* 11. *betulaefolia* Loudon, Arb. Frut. Brit. **3**: 1376 (1838).
*Ulmus betulaefolia* Loddiges Cat. (1836) ex Loudon l. c. (1838) pro synon. praeced.
*Ulmus campestris* α. *nuda* subvar. *betulaefolia* Hort. Vilv. ex Wesmael in Bull. Soc. Hort. Belg. **1862**: 389 (1863).
*Ulmus campestris* c. *laevis* 2. *betulaefolia* (Loud.) Boulger in Gard. Chron. n. ser. **12**: 298 (1879).
? *Ulmus sativa* Mill. f. *angustifolia* Druce, List Brit. Pl. 63 (1908), nom. nud.
*Ulmus nitens* var. *betulaefolia* (Loud.) Henry in Elwes & Henry, Trees Gt. Brit. Irel. **7**: 1896 (1913).
? *Ulmus carpinifolia* b. *angustifolia* Druce, Brit. Pl. List, ed. 2, p. 103 (1928), nom. nud.

A tree of pyramidal habit with ascending branches and elliptic to elliptic-oblong leaves 4–8 cm. long, narrowed towards the unequal base.

**Ulmus carpinifolia** var. **Hunnybuni** (Moss) Druce, Brit. Pl. List, ed. 2, p. 103 (1928).

*Ulmus nitens* var. *hunnybuni* Moss, Cambridge Fl. **2**: 90, pl. 90, 91 (1914).

Large tree with the lower branches spreading, the upper somewhat tortuous; leaves rather narrow, narrow-elliptic or narrow-ovate to oblong-ovate to oblong-obovate, 5–10 cm. long, distinctly doubly serrate, acuminate, very unequal at base; fruit obovate 14–18 mm. long.

**Ulmus carpinifolia** var. **Sowerbyi** (Moss) Druce, Brit. Pl. List, ed. 2, p. 103 (1928).

*Ulmus glabra* Smith, Engl. Bot. **32**: 2248, t. (1811), synon. exclud.
*Ulmus tortuosa* Host, Fl. Austr. **1**: 330 (1827).
*Ulmus nitens* var. *sowerbyi* Moss, Cambridge Brit. Fl. **2**: 90 (1914). — Lynch in Jour. Roy. Hort. Soc. **41**: 16, fig. 12 (1915).

Similar to var. *Hunnybuni,* but a smaller tree with the upper branches very tortuous, the leaves smaller, acute, and the fruits smaller, elliptic to obovate.

**Ulmus carpinifolia** var. **cornubiensis** (West.), comb. nov.

*Ulmus campestris* 7. *cornubiensis* Weston, Bot. Univ. **1**: 315 (1770).
*Ulmus campestris* β. *stricta* Aiton, Hort. Kew, **1**: 319 (1789), pro parte.
*Ulmus reticulata* α. *stricta* (H. H. Lond. nec dec.) Dumortier, Flor. Belg. 25 (1827).
*Ulmus stricta* Lindley, Syn. Brit. Fl. 227 (1829).
*Ulmus campestris* var. *cornubiensis* Loudon, Arb. Frut. Brit. **3**: 1376 (1838).
*Ulmus campestris* d. *fastigiata* (Audib. Cat.) Spach in Ann. Sci. Nat. sér. 2, **15**: 362 (1841). — Planchon in Ann. Sci. Nat. sér. 3, **9**: 273 (1848).
*Ulmus glabra* 2. *fastigiata* Kirchner in Petzold & Kirchner, Arb. Musc. 560 (1864).
*Ulmus glabra* var. c. *stricta* (Loud.) Schneider, Ill. Handb. Laubholzk. **1**: 220 (1904).
*Ulmus sativa* c. *stricta* (Lindl.) Druce, List Brit. Pl. 63 (1908).
*Ulmus nitens* var. *stricta* (Ait.) Henry in Elwes & Henry, Trees Gt. Brit. Irel. **7**: 1888 (1913).
*Ulmus foliacea* var. *stricta* (Ait.) Rehder in Bailey, Stand. Cycl. Hort. **6**: 3412 (1917).
(? ×) *Ulmus stricta* (Lindl.) Bancroft in Jour. Bot. **75**: 344 (1937).

A narrow pyramidal tree with ascending branches. The oldest name for this variety is Weston's *U. campestris cornubiensis;* though it is only briefly characterized by the words "cornubiensis, foliis minoribus," there can be no doubt to which elm the name applies, since the tree was well known in England as Cornish elm. By several English authors this is considered a distinct species under the name of *U. stricta* Lindl. with the following form as a variety.

**Ulmus carpinifolia** var. **cornubiensis** f. **sarniensis** (Loud.), comb. nov.

*Ulmus campestris* 8. *sarniensis* (Lodd.) Loudon, Arb. Frut. Brit. **3**: 1376 (1838).
*Ulmus campestris Wheatleyi* Simon-Louis, Cat. **1869**: 98. — Bean in Gard. Chron. ser. 3, **41**: 149, fig. 67 (1907).
*Ulmus nitens* var. *Wheatleyi* (Simon-Louis) Henry in Elwes & Henry, Trees Gt. Brit. Irel. **7**: 1891, pl. 412, fig. 21 (1913).
*Ulmus stricta* var. *Wheatleyi* Bean, Trees Shrubs Brit. Isl. **1**: 86, t.; **2**: 620 (1914).
*Ulmus foliacea* var. *Wheatleyi* Rehder in Bailey, Stand. Cycl. Hort. **6**: 3412 (1917).
(? ×) *Ulmus sarniensis* (Moss) Bancroft in Jour. Bot. **75**: 345 (1937).
*Ulmus stricta* var. *sarniensis* Moss in Gard. Chron. ser. 3, **51**: 199 (1912).

Closely related to the preceding variety, but with narrower head formed of stiffly ascending long branches, with broader leaves and flowers with white, not pink, stigmas. Loudon's description is unsufficient but is apparently applicable to this form, since it is called "Jersey elm."

**Ulmus carpinifolia** var. **cornubiensis** f. **Webbiana** (Simon-Louis), comb. nov.

? *Ulmus campestris* 17. *concavæfolia* Hort. ex Loudon, Arb. Frut. Brit. **3**: 1378 (1838).
*Ulmus campestris Webbiana* Lee ex Simon-Louis, Cat. **1869**: 97.
*Ulmus glabra* var. *Webbiana* Lee ex Hartwig, Ill. Gehölzb. 392 (1892).
*Ulmus nitens* var. *Webbiana* (Simon-Louis) Henry in Elwes & Henry, Trees Gt. Brit. Irel. **7**: 1895 (1913).
*Ulmus foliacea* var. *Webbiana* (Lee) Rehder in Bailey, Stand. Cycl. Hort. **6**: 3413 (1917).

A form of var. *cornubiensis* with leaves folded longitudinally.

**Ulmus carpinifolia** var. **Dampieri** (Wesm.), comb. nov.

*Ulmus campestris* α. *nuda* subvar. 6. *fastigiata Dampieri* Hort. Vilv. ex Wesmael in Bull. Féd. Soc. Hort. Belg. **1862**: 389 (1863).
*Ulmus montana* 3. *Dampieri* Hort. ex Kirchner, Arb. Musc. 563 (1864).
*Ulmus scabra* var. *Dampieri* Hort. ex Hartwig, Ill. Gehölzb. 393 (1892).
× *Ulmus Dippeliana* f. *Dampieri* (Kirchn.) Schneider, Ill. Handb. Laubholzk. **1**: 218 (1904).
*Ulmus nitens* var. *Dampieri* Henry in Elwes & Henry, Trees Gt. Brit. Irel. **7**: 1894 (1913).
*Ulmus foliacea* var. *Dampieri* (Kirchn.) Rehder in Bailey, Stand. Cycl. Hort. **6**: 3412 (1917).

This variety is of fastigiate habit with upright curved branches and crowded broad leaves, deeply toothed, almost lobulate, with crenate-serrate teeth. It is similar in habit to *U. glabra* var. *exoniensis* (K. Koch) Rehd. and has been confused with that variety.

**Ulmus carpinifolia** var. **Dampieri** f. **Wredei** (Jühlke), comb. nov.

*Ulmus Dampieri* var. *Wredei* Jühlke in Hamb. Gart.-Blumenzeit. **33**: 485 (1877).

*Ulmus campestris Wredei* Hort. ex Lauche, Deutsch. Dendr. 347 (1880).

*Ulmus montana* var. *Dampieri aurea* Wrede ex Jaeger & Beissner, Ziergeh. ed. 2, 403 (1884).

*Ulmus montana* var. *Dampieri Wredei* Ruempler, Gartenbau-Lex. 930 (1890). — Rehder in Möller's Deutsch Gärtn.-Zeit. **13**: 160, fig. (1898).

*Ulmus scabra* var. *Dampieri* var. *Wredei* (Jühlke) Hartwig, Ill. Gehölzb. 393 (1892).

*Ulmus montana* var. *fastigiata aurea* Hort. ex Nicholson, Kew Hand-list Trees Shrubs, **2**: 141 (1896).

*Ulmus Dippeliana* f. *Wredei* (Hort.) Schneider, Ill. Handb. Laubholzk. **1**: 218, fig. 136p (1904).

*Ulmus nitens* f. *Wredei* Rehder in Mitt. Deutsch. Dendr. Ges. **24**(1915): 218 (1916).

*Ulmus foliacea* var. *Wredei* Rehder in Bailey, Stand. Cycl. Hort. **6**: 3413 (1917).

This is a yellow-leaved form of the preceding variety and like that, has been confused with *U. glabra* var. *fastigiata* (Loud.) Rehd.

**Ulmus carpinifolia** var. **umbraculifera** (Trautv.), comb. nov.

*Ulmus campestris* var. *umbraculifera* Trautvetter in Act. Hort. Petrop. **2**: 590 (1873). — Spaeth in Monatschr. Ver. Gartenb. Preuss. **22**: 19, fig. 1 (1879).

*Ulmus glabra* var. a. *typica* f. *umbraculifera* (Dipp.) Schneider, Ill. Handb. Laubholzk. **1**: 220 (1904).

*Ulmus densa* Litvinov in Sched. Herb. Fl. Ross. **6**: 163, no. 1991, t. 1, 2 (1908). — U. S. Bur. Pl. Indust. Bull. Pl. Introd. **78**: 478, t. (1912).

*Ulmus campestris* a. *glabra* α. *vulgaris* 1. *umbraculifera* (Spaeth) Ascherson & Graebner, Syn. Mitteleur. Fl. **4**: 553 (1911).

*Ulmus nitens* var. *umbraculifera* (Trautv.) Henry in Elwes & Henry, Trees Gt. Brit. Irel. **7**: 1893 (1913).

*Ulmus foliacea* var. *umbraculifera* (Trautv.) Rehder in Bailey Stand. Cycl. Hort. **6**: 3412 (1917).

This variety forms a dense subglobose head and also differs in its rather small often nearly simply serrate leaves. It is planted as a street tree in Turkestan and Persia and was introduced into European gardens from Persia about 1878.

**Ulmus carpinifolia** var. **umbraculifera** f. **gracilis** (Spaeth), comb. nov.

*Ulmus campestris umbraculifera gracilis* Spaeth, Cat. no. **100**: 121 (1897).

*Ulmus glabra* a. *typica* f. *gracilis* (Spaeth) Schneider, Ill. Handb. Laubholzk. **1**: 220 (1904).

*Ulmus campestris* a. *glabra* α. *vulgaris* 1. *gracilis* (Schneid.) Ascherson & Graebner, Syn. Mitteleur. Fl. **4**: 553 (1911).
*Ulmus nitens* var. *umbraculifera gracilis* (Spaeth) Henry in Elwes & Henry, Trees Gt. Brit. Irel. **7**: 1893 (1913).
*Ulmus foliacea* var. *gracilis* (Spaeth) Rehder in Bailey, Stand. Cycl. Hort. **6**: 3412 (1917).

A form of the preceding variety with slenderer more crowded branches and smaller leaves. Originated in Spaeth's nursery near Berlin.

**Ulmus carpinifolia** var. **umbraculifera** f. **Koopmanni** (Spaeth), comb. nov.

*Ulmus Koopmanni* Lauche ex Spaeth, Cat. no. **62**[1885–86]: 6, 101 (1885).
*Ulmus campestris* var. *Koopmanni* Hort. ex Nicholson in Kew Hand-list Trees Shrubs, **2**: 135 (1896), nomen.
*Ulmus glabra* a. *typica* f. *koopmanni* (Spaeth) Schneider, Ill. Handb. Laubholzk. **1**: 220 (1904).
*Ulmus campestris* b. *nuda* 2. *Koopmanni* (Lauche) Ascherson & Graebner, Syn. Mitteleur. Fl. **4**: 557 (1911).
*Ulmus nitens* var. *Koopmanni* (Spaeth) Rehder in Mitt. Deutsch. Dendr. Ges. **24**(1915): 218 (1916).
*Ulmus foliacea* var. *Koopmanni* (Lauche) Rehder in Bailey, Stand. Cycl. Hort. **6**: 3412 (1917).

A form of var. *umbraculifera* similar in leaf, but with an ovoid head if grafted high, shrubby and stoloniferous if propagated by cuttings. Henry (in Elwes & Henry, Trees Gt. Brit. Irel. **7**: 1927, 1913) refers this form as a variety to *U. pumila* L., but the cultivated plants I have seen do not belong to that species.

**Ulmus carpinifolia** var. **suberosa** (Moench), comb. nov.

*Ulmus suberosa* Moench, Verz. Bäume Weissenst. 136 (1785).
*Ulmus tetranda* Schkuhr, Bot. Handb. **1**: 178, t. 58b (1791).
*Ulmus campestris* 6. *U. fungosa* Dumont de Courset, Bot. Cult. **3**: 700 (1802).
*Ulmus campestris* β. *suberosa* (Ehrh.) Wahlenberg, Fl. Carpat. 71 (1814).
*Ulmus campestris* f. *suberosa* (Ehrh.) Voss, Vilmorin Blumengärt. **1**: 906 (1895).
*Ulmus glabra* b. *suberosa* (Moench) Gürke in Richter & Gürke, Pl. Eur. **2**: 72 (1897). — Schneider, Ill. Handb. Laubholzk. **1**: 220 (1904).
*Ulmus vulgaris* β. *suberosa* (Koch) Rouy, Fl. France, **12**: 266 (1910).
*Ulmus nitens* var. *suberosa* (Moench) Henry in Elwes & Henry, Trees Gt. Brit. Irel. **7**: 1885 (1913).
*Ulmus foliacea* var. *suberosa* (Moench) Schneider in Oester. Bot. Zeitschr. **66**: 79 (1916).

This variety differs chiefly in the corky-winged branches, in the usually shrubby habit and the small leaves often more or less rough above.

**Ulmus carpinifolia** var. **suberosa** f. **propendens** (Schneid.), comb. nov.

*Ulmus suberosa* var. *pendula* Lavallée, Arb. Segrez. 236 (1877), nom. nud.

*Ulmus campestris* var. *microphylla pendula* Hort. ex Nicholson in Kew Hand-list Trees Shrubs, **2**: 135 (1896), nom. nud., huc ducendum secundum Henry in Elwes & Henry, Trees Gt. Brit. Irel. **7**: 1888 (1913).

*Ulmus campestris suberosa pendula* Siesmayer in Möller's Deutsch. Gärtn.-Zeit. **16**: 163, fig. (1901), non *U. campestris pendula* David, nec Ktze., nec Dipp.

*Ulmus glabra* var. *suberosa* f. *propendens* Schneider, Ill. Handb. Laubholzk. **1**: 220 (1904).

*Ulmus campestris* B. *suberosa* a. *fruticosa* 1. *propendens* (Schneid.) Ascherson & Graebner, Syn. Mitteleur. Fl. **4**: 560 (1911).

A form of the preceding variety with pendulous branches.

**Ulmus carpinifolia** var. **italica** (Henry), comb. nov.

*Ulmus nitens* var. *italica* Henry in Elwes & Henry, Trees Gt. Brit. Irel. **7**: 1892, t. 411, fig. 9 (1913).

*Ulmus foliacea* var. *italica* (Henry) Rehder in Bailey, Stand. Cycl. Hort. **6**: 3412 (1917).

A geographical variety found in southern Europe and Algeria and differing chiefly in the leaves having 14–18 pairs of lateral veins.

**Photinia Tsaii**, sp. nov.

Frutex 0.5–1.5 m. altus vel arbor ad 7 m. alta, ramulis initio dense floccoso-tomentosis mox glabratis et demum glabris fusco-brunneis lenticellatis. Folia coriacea, lanceolata vel oblonga, 4–7 cm. longa et 10–17 mm. lata, acuminata, basi in petiolum 3–6 mm. longum attenuata, dense serrulata vel crenato-serrulata dentibus subadpressis vel leviter incurvis, supra rugulosa glabra, subtus reticulata, venis utrinque 8–11 curvatis et ante marginem anastomosantibus ut costa prominentibus, initio subtus tomento floccoso detergibili obtecta, mox glabrescentia, demum ut petioli glaberrimi. Flores non visi. Corymbus fructiferus 4–5 cm. diam., congestus, ramulis et pedicellis glabratis dense et conspicue lenticellatis, pedicellis 2–5 mm. longis; fructus ovoideus, 8–10 mm. longus, 6–8 mm. latus, ruber, glaber, dentibus calycis triangularibus erectis pubescentibus coronatus; ovarium tertia vel quarta parte superiore semiglobosa excepta cupulae adnatum, 2–3-loculare; semina 2–6, fusco-brunnea, 4–4.5 mm. longa.

YUNNAN: Shang-pa Hsien, alt. 1500–2000 m., *H. T. Tsai, 54959*, Oct. 28, 1933 (type, in herb. Arnold Arb.); *54688*, Sept. 28, 1933; *58945*, Oct. 24, 1934.

This new species seems most nearly related to *P. stenophylla* Hand.-Mazz., which is easily distinguished by the glabrousness of the branches and leaves, by the smaller inflorescence with slender smooth branchlets and pedicels. It may also be compared with *P. loriformis* W. W. Sm. which chiefly differs in the persistent grayish or fulvous appressed tomentum of the under side of the leaves and their remote spinulose serration, and by the absence of lenticels from the branches and the inflorescence. *Photinia loriformis*, which is remarkable for its dimorphous foliage, occurs also in southern Szechuan where it was collected near Hui-li-chuo by C. Schneider (no. 4068, March 24, 1914).

**Prunus tenella** Batsch, Beytr. Entw. Pragm. Gesch. Drey Natur-Reiche, 29 (1801).

*Amygdalus nana* Linnaeus, Sp. Pl. 473 (1753). — Pallas, Fl. Ross. 12, t. 6 (1784). — Curtis, Bot. Mag. **5**: t. 161 (1792). — Schmidt, Oester. Baumz. **4**: 25, t. 205 (1822). — Spach in Ann. Sci. Nat. sér. 2, **19**: 113 (1843).

*Amygdalus georgica* Desfontaines, Hist. Arb. Arbriss. **2**: 221 (1809). — Jaume St.-Hilaire, Fl. & Pom. Franç. **4**: t. 364 (1831).

*Prunus nana* (L.) Stokes, Bot. Mat. Med. **3**: 103 (1812). — Focke in Engler & Prantl, Nat. Pflanzenfam. III. **3**: 54 (1888). — Non Du Roi.

*Amygdalus nana* var. *georgica* Schmidt, Oester. Baumz. **4**: 25, t. 204 (1822). — DC. msc. ex Seringe in DeCandolle, Prodr. **2**: 530 (1825). — Schneider, Ill. Handb. Laubholzk. **1**: 598, fig. 333c[1] (1906).

*Amygdalus nana* α. *vulgaris* DC. mss. ex Seringe in DeCandolle, Prodr. **2**: 530 (1825). — Medvyedyef, Dereb. Kust. Kabkas. 79 (1883).

*Amygdalus fructicosa* Wenderoth in Schrift. Beförd. Ges. Naturwiss. Marburg, **2**: 252 (1831). — Schlechtendal in Bot. Zeit. **23**: 339 (1863), *"fruticosa."*

*Amygdalus Ledebouriana* Schlechtendal in Abhandl. Naturf. Ges. Halle, **2**: 21 (1854); in Hamburg. Gart. Blumenzeit. **11**: 305 (1855).

*Amygdalus Heuckeana* Schlechtendal in op. cit. 22 (1854); in op. cit. **11**: 305 (1855).

*Amygdalus Pallasiana* Schlechtendal in op. cit. 14 (1854); in op. cit. **11**: 301 (1855); in Bot. Zeit. **23**: 341, t. 12, fig. B, 1 (1865).

*Prunus nana* α. *typica* Beck, Fl. Niederöstr. 817 (1891); in Reichenbach, Ic. Fl. Germ. **25, 2**: 7, t. 88, fig. 1–5 (1913).

*Prunus nana* f. *georgica* (Desf.) Voss, Vilmorin's Blumengärt. **1**: 232 (1894).

*Prunus nana* var. a. *georgica* (DC.) Schneider, Ill. Handb. Laubholzk. **1**: 599, fig. 333c[1] (1906). — Ascherson & Graebner, Syn. Mitteleur. Fl. **6, 2**: 141 (1906).

Since *Prunus nana* (L.) Stokes is a later homonym of *P. nana* Du Roi, the next oldest name *P. tenella* Batsch has to take its place under the genus *Prunus*.

The species shows considerable variation in the size and shape of the

leaves and of the fruit, in the length of the calyx-lobes, also in the more or less intense coloring of the flowers; several species have been distinguished but the characters gradually pass into each other and none of them seem to be concomitant. Therefore, only one variety is here maintained, characterized chiefly by broader generally obovate leaves, and several forms of horticultural rather than botanical interest.

**Prunus tenella** f. **alba** (Schneid.), comb. nov.

*Amygdalus nana* L. γ. *flore albo* Koch, Hort. Dendr. 138 (1853). — Mouillefert, Traité Arb. Arbriss. **1**: 394 (1892).

*Prunus nana* var. a. *georgica* f. *alba* Schneider, Ill. Handb. Laubholzk. **1**: 599 (1906).

*Prunus nana* var. *alba* Bean, Trees Shrub Brit. Isles, **2**: 245 (1914).

This differs from typical *P. tenella* in its white flowers.

**Prunus tenella** f. **angustifolia** (Spach), comb. nov.

*Amygdalus nana* L. γ. *angustifolia* Spach in Ann. Sci. Nat. sér. 2, **19**: 111 (1843).

*Prunus nana* var. *georgica* f. *angustifolia* Schneider, Ill. Handb. Laubholzk. **1**: 599 (1906).

This form differs from the type in its very narrow linear-lanceolate leaves.

**Prunus tenella** f. **Gessleriana** (Kirchn.), comb. nov.

? *Amygdalus nana* δ. *flore purpureo* Koch, Hort. Dendr. 139 (1853).

*Amygdalus Gessleriana* Hort. ex Kirchner in Petzold & Kirchner, Arb. Musc. 241 (1864).

*Amygdalus nana speciosa* Carrière in Rev. Hort. **1872**: 118; **1874**: 370, pl.

*Amygdalus nana* var. *speciosa* Mouillefert, Traité Arb. Arbriss. **1**: 394 (1894).

*Prunus nana* f. *Gessleriana* Voss, Vilmorin's Blumengärt. **1**: 232 (1894). — Schneider, Ill. Handb. Laubholzk. **1**: 599 (1906).

*Prunus nana* A. *Georgica* b. *Gessleriana* (Schneid.) Ascherson & Graebner, Syn. Mitteleur. Fl. **6**, **2**: 141 (1906).

*Prunus nana rubra* Anon. in Gard. Chron. ser. 3, **52**: 390, pl. (1912).

*Prunus nana* var. *Gessleriana* [Nicholson in] Kew Hand-list Trees Shrubs, 209 (1902), nomen. — Bean, Trees Shrubs Brit. Isles, **2**: 245 (1914).

*Prunus nana* var. *rubra* Hort. ex Bailey, Stand. Cycl. Hort. **5**: 2832 (1916).

The chief character of this form is the intensely red color of the flowers particularly the buds which are described by Kirchner (l. c.) as beautifully carmine-red. The colored plates cited above bear out this statement.

**Prunus tenella** var. **campestris** (Besser), comb. nov.

*Amygdalus campestris* Besser, Enum. Pl. Volhyn. 46, 58 (1822). — Host, Fl. Austr. **2**: 2 (1831). — Reichenbach, Fl. Germ. Excurs. 646 (1832).

*Amygdalus nana* δ. *campestris* Seringe in DeCandolle, Prodr. **2**: 530 (1825).

*Amygdalus Besseriana* Schott in Cat. Hort. Vindob. 1818 ex Seringe, l. c. (1825), pro synon. praeced. — Schlechtendal in Abh. Naturf. Ges. Halle, **2**: 17 (1854); in Bot. Zeit. **23**: 341, t. 12, fig. B2 (1864).

*Amygdalus nana* var. β. A. *Besseriana* Schott ex Bosse, Vollst. Handb. Blumengärt. **1**: 254 (1840).

*Amygdalus sibirica* Loddiges, Bot. Cab. **16**: t. 1599 (1829), descript. manca. — Tausch, in Flora, **17**: 491 (1834). — Schlechtendal in Abh. Naturf. Ges. Halle, **2**: 20 (1854); in Hamburg. Gart. Blumenzeit. **11**: 270 (1855).

*Amygdalus nana* β. *latifolia* Ledebour, Fl. Alt. **2**: 210 (1830); Fl. Ross. **2**: 2 (1844). — Spach in Ann. Sci. Nat. sér. 2, **19**: 111 (1843).

*Amygdalus nana* var. 5. *sibirica* Lodd. Cat. ex Loudon, Arb. Frut. Brit. **2**: 674 (1838).

*Amygdalus Gaertneriana* Schlechtendal in Abh. Nat. Ges. Halle, **2**: 18 (1854); in Hamburg. Gart. Blumenzeit. **11**: 262 (1855); in Bot. Zeit. **23**: 341, t. 12, fig. B, 3 (1865).

*Amygdalus nana* 2. *sibirica* Tausch ex Kirchner in Petzold & Kirchner, Arb. Musc. 241 (1864).

*Amygdalus nana* b. *latifolia* Medvyedyef, Dereb. Kust. Kabkas. 79 (1883). — Akinfiyef in Trudi Obshch. Ispyt. Prirod. Kharkof Univ. **27**: 276 (Fl. Centr. Cauc.) (1892).

*Prunus nana* β. *campestris* Beck, Fl. Niederoestr. 817 (1891); in Reichenbach, Ic. Fl. Germ. **25, 2**: 8, t. 88, fig. 6–9 (1913). — Schneider, Ill. Handb. Laubholzk. **1**: 599, fig. 333c (1906).

? *Prunus nana* α. *typica* f. *spathulata* Beck, l. c. (1891).

*Prunus nana* f. *campestris* Ser. ex Voss, Vilmorin's Blumengärt. **1**: 232 (1894).

This variety differs from the type chiefly in its broader and larger leaves, elliptic or elliptic-oblong to obovate-elliptic or oblong-obovate, at least on the sterile branches, narrower sepals more than half as long as the tube, usually narrower petals and suborbicular fruit. None of these characters, however, seems to be entirely stable and reliable. The color of the flower is given by Besser as white, but Ledebour (Fl. Ross. **2**: 2) states that the plants raised from seed of *A. campestris* sent by Besser himself had pink flowers, and as almost all later authors describe this variety as having pink flowers, I have enumerated below the white-flowered plant as a distinct form of this variety.

**Prunus tenella** var. **campestris** f. **albiflora** (Schneid.), comb. nov.

*Prunus nana* var. *campestris* f. *albiflora* Schneider, Ill. Handb. Laubholzk. **1**: 599 (1906).

*Prunus nana β. campestris* lus. *albiflora* Ascherson & Graebner, Syn. Mitteleur. Fl. **6, 2:** 141 (1906).

*Amygdalus latifolia alba* Hort. ex Schneider l. c. (1906), pro synon. praeced. — Ascherson & Graebner, l. c. (1906), pro synon. praeced.

? *Prunus nana* var. *cochinchinensis* Bailey, Cycl. Am. Hort. **3:** 1456 (1901); Stand. Cycl. Hort. **5:** 2832 (1916); not *Amygdalus cochinchinensis* Lour.

This differs from *P. nana* var. *campestris* in its white flowers. The normal color of that variety is apparently pink, but Besser described his *P. campestris* as white-flowered (see the remarks under var. *campestris*).

Of the following varieties and forms I have seen no specimens:

*Amygdalus nana β biserrata* Spach in Ann. Sci. Nat. sér. 2, **19:** 110 (1843).

*Amygdalus nana microflora* Carrière in Rev. Hort. **1872:** 340. — Mouillefert, Traité Arb. Arbust. **1:** 394 (1892).

*Amygdalus nana campanuloides* Carrière, l. c. — Mouillefert, l. c.

Arnold Arboretum,
Harvard University.

# NOMENCLATURAL NOTES ON HYPERICUM

Henry J. Lott

**Hypericum tubulosum** Walter var. **Walteri** (Gmel.), comb. nov.

*Hypericum petiolatum* Walter, Fl. Carol. 191 (1788). — Non Linnaeus (1763).

*Hypericum Walteri* Gmelin, Syst. Nat. **2**: 1159 (1791), as *Hypericon Walteri*. — Lott in Jour. Arnold Arb. **19**: 151 (1938).

Professor Fernald kindly drew my attention to the invalidity of the combination *Hypericum Walteri* var. *tubulosum* (Walt.) Lott. Since *H. tubulosum* Walt. (1788) antedates *H. Walteri* Gmel. (1791), the former name must be maintained for the species, with *H. Walteri* var. *tubulosum* as a synonym, and *H. Walteri* reduced to varietal rank.

**Hypericum fasciculatum** Lamarck, Encycl. Méthod. **4**: 160 (1797).

*Hypericum aspalathoides* Willdenow, Sp. Pl. **3**: 1451 (1803).

*Hypericum galioides* var. *cubense* & var. *axillare* Griseb., Cat. Pl. Cubens. 39 (1866). — **Synon. nov.**

*Hypericum limosum* Grisebach, Cat. Pl. Cubens. 39 (1866). — **Synon. nov.**

The extremes of this species are remarkably distinct; at one end of the series is a form having leaves which do not exceed 5 mm., and at the other a form in which all the leaves are over 2 cm. long. The habitat, habit, fasciculation of the leaves, inflorescence, length of sepals in relation to petals, and the size and shape of the capsule are also exceedingly variable characters on the specimens which I have seen. After a careful study of well over one hundred sheets of this species in the herbarium of the Arnold Arboretum and of the Gray Herbarium, I find, as Coulter did when he monographed the North American species of *Hypericum*, that the forms of *H. fasciculatum* intergrade so gradually as to make segregation impracticable.

If Lamarck's type material of *H. fasciculatum* consists, as Coulter states (in Bot. Gaz. **11**: 85. 1886, & in Gray, Synop. Fl. N. Am. **1**: 286. 1897), of the short-leaved form, this leaf-form certainly cannot be separated and called *H. aspalathoides*, as some taxonomists do. Coulter's statement, however, is undoubtedly erroneous. There is nothing which indicates that he ever saw the type, and those who, like Gray, actually examined type material applied the name *H. fasciculatum* to the long-

leaved form. Lamarck's description of the leaves, "Les feuilles sont . . . moins courtes que les entrenoeuds, longues d'environ un demi-pouce sur une largeur qui excède rarement un tiers de ligne.", unmistakably applies to the long-leaved form, but it is possible that Coulter misinterpreted Lamarck's description, for the clause "les feuilles sont moins courtes que les entrenoeuds" can be very easily misread as "the leaves are shorter than the internodes." This apparent slight misinterpreteion would be sufficient to lead one into error.

Taxonomists who distinguish the short-leaved form of this species either as *H. aspalathoides* Willd. or *H. fasciculatum* var. *aspalathoides* (Willd.) Torr. & Gray, have overlooked the fact that Willdenow did not describe a new species under this name. Willdenow, disregarding priority, proposed the new name *H. aspalathoides* for Lamarck's *H. fasciculatum* because he preferred to use the epithet *fasciculatum* for *H. fasciculatum* Michaux (1803), non Lamarck (1797). Willdenow's description of *H. aspalathoides* is an abridged Latin translation of Lamarck's description without original additions. It appears that even the specific name *aspalathoides* is taken from the description of Lamarck who, describing the leaves, states, "Il a, pour ainsi dire, le feuillage d'un génèvrier ou de certains *aspalathus* . . ."

Torrey and Gray were apparently the first (Fl. N. Am. **1**: 672. 1840) to restrict the use of Willdenow's name to the short-leaved form of *H. fasciculatum*. They proposed *H. fasciculatum* var. *aspalathoides* for their previously described *H. fasciculatum* var. $\beta$, and cited in the synonymy "H. aspalathoides *Willd.* (H. rosmarinifolium, *Kinn*, in *herb. Willd.*!)". When traveling in Europe, Gray saw, according to the citation, in the herbarium of Willdenow a specimen of the short-leaved form of *H. fasciculatum* labeled with the herbarium name of Kinn,[1] *H. rosmarinifolium*, and identified as *H. aspalathoides*. Torrey and Gray concluded that this was the type-specimen of Willdenow's *H. aspalathoides*, but the very text of Willdenow's Species Plantarum shows this conclusion to be incorrect. In the preface (Sp. Pl. **1**: vii. 1797), Willdenow states, "Plantas Herbarii proprii, quas vel vivas (v. v.) vel siccas (v. s.) vel sine flore vivas (v. v. s. fl.) vel sine flore siccas (v. s. s. fl.) vel modo cum fructu siccas (v. s. c. fr.) vidi, adhibitis heic indicatis signis notavi, ut quisque videret, quaenam vegetabilia ex aliorum descriptionibus descripta assumserim." The lack in Willdenow's description of any such abbreviated reference to a specimen is a certain indication that

[1]Barnhart (in Bartonia, **9**: 38-39. 1926) says: "Matthias Kinn was a German who came to America in the latter part of the eighteenth century to collect plants and seeds for exportation to his native land." See also: Meehan in Gard. Monthly, **6**: 260-261, 338-339 (1864). — Harshberger, Botanists of Philadelphia, 184 (1899).

at that time he did not have Kinn's specimen, or, at least, that this specimen had not been identified as *H. aspalathoides*. This evidence that Willdenow published *H. aspalathoides* without having seen a specimen strengthens the conclusion that he merely changed the name *H. fasciculatum* to *H. aspalathoides*, and did not describe a new species.

Arnold Arboretum,
Harvard University.

## SEVEN BINOMIALS PROPOSED AS NOMINA AMBIGUA

ALFRED REHDER, ERNEST J. PALMER and LEON CROIZAT

**Pinus maritima** Mill. — The name *Pinus maritima* Mill. Gard. Dict. ed. 8, no. 7 (1768) has been applied to three different species. Most authors applied the name to the pine named later *P. Pinaster* Ait., although they did not always quote Miller as the author, but often other authors describing the same species as Miller. Some of these authors are: Du Roi, Harbk. Baumz. **2:** 42 (1772); Lamarck, Fl. Franç. **2:** 201 (1778); Gmelin, Syst. Nat. ed. 13, **2:** 1072 (1791), based on Duhamel, Arb. Arbust. **2:** t. 28, 29 (1755); Poiret in Lam. Enc. Méth. **5:** 337 (1804), based on Gmelin, l. c.; DC. & Lam., Fl. Franç. ed. 3, **3:** 275 (1805); Voss in Mitt. Deutsch. Dendr. Ges. **1907:** 91; Suringar in Mitt. Deutsch. Dendr. Ges. **1927:** 296; Fitschen in Beissn., Handb. Nadelh. ed. 3, p. 405 (1930); Hegi, Ill. Fl. Mittel-Eur. ed. 2, **1:** 138 (1935). The following authors have applied the name *P. maritima* to *P. halepensis* Mill.: Lambert, Descr. Gen. Pinus, t. 9, 10 (1803); Willd., Sp. Pl. **4:** 497 (1805), based on Lambert, l. c.; Aiton, Hort. Kew, ed. 3, **5:** 315 (1813). A few authors have used the *P. maritima* for *P. nigra* Arn. as: Koch, Syn. Fl. Germ. 667 (1837), K. Koch, Dendr. **2**[2]: 287 (1873), and Aschers. & Graebn., Syn. Mitteleur. Fl. ed. 2, **1:** 331 (1912) cite "P. maritima Mill.?" as a synonym of *P. nigra*, also Beissn., Handb. Nadelh. 238 (1891) cites *P. maritima* Ait. as a synonym of *P. nigra*. Schwarz (in Notizbl. Bot. Gart. Mus. Berlin, **18:** 226. 1936; **19:** 135. 1938) gives good reasons for the identity of *P. maritima* and *P. nigra* and transfers the varieties of *P. nigra* Arnold (*P. austriaca* Höss) to *P. maritima*. Almost all other authors from the second decade of last century to the beginning of the present century have cited *P. maritima* with various authors only as a synonym or do not mention it at all, as: Spreng. Syst. Veg. **3:** 886 (1826); Carrière, Traité Conif. 365 (1855); Beissn., l. c. (1891); Aschers. & Graebn., op. cit. **1:** 216 (1897); Rouy, Fl. France, **14:** 362 (1913). In view of the confusing use of the name *P. maritima*, it seems advisable to add this name to the list of *nomina ambigua rejicienda*, as already proposed by Aschers. & Graebn. op. cit. **1:** 216 (1897); ed. 2, **1:** 335 (1913) and Graebner in Mitt. Deutsch. Dendr. Ges. **1908:** 68.

A. R.

**Betula alba** L. — The name *Betula alba* L. was applied by Linnaeus (Spec. Pl. 982. 1753) to all the European species of *Betula* except *B. nana*. He was followed by most of the early botanists, also by some later authors as: Wahlenberg, Fl. Suec. 623 (1824–6), Fries, Fl. Scan. 145 (1835), Hooker, Brit. Fl. ed. 3, **1**: 411 (1835), Spach in Ann. Sci. Nat. ser. 2, **15**: 186 (1841), Benth., Handb. Brit. Fl. **2**: 751 (1865), Regel in DC. Prodr. **16**$^{2}$: 162 (1868), Fiori & Paoletti, Fl. Anal. Ital. **1**: 263 (1896–8). The first to distinguish two species was Roth, Tent. Fl. **1**: 404 (1788) who distinguished *B. pendula* and reserved *B. alba* for the species later called *B. pubescens* Ehrh. With the same conception *B. alba* was used by K. Koch, Dendr. **2**$^{1}$: 649 (1872), Willkomm, Forstl. Fl. 302 (1887), Dippel, Handb. Laubh. **2**: 172 (1892), Schneider, Ill. Handb. Laubh. **1**: 116 (1904). The opposite view was taken by Borkhausen, Forstb. **1**: 479 (1800), who applied the name *B. alba* to the species called *B. pendula* Roth (*B. verrucosa* Ehrh.); he was followed by Willd., Sp. Pl. **4**: 462 (1805); Lam. & DC., Fl. Franç. ed. 3, **3**: 301 (1805); Sprengel, Syst. Veg. **3**: 854 (1820); Koch, Syn. Fl. Germ. 662 (1837); Hartman, Skand. Fl. ed. 5, 212 (1849); Ledeb., Fl. Ross. **3**: 650 (1850), Marshall in Moss, Cambr. Brit. Fl. **2**: 81 (1914). The majority of later botanists, however, followed Ehrhart, Beitr. **6**: 98 (1791) and abandoned the name *B. alba* altogether, applying the name *B. verrucosa* or *B. pendula* to one of the species and *B. pubescens*, *B. odorata* Bechst. or *B. tomentosa* Reith. & Abel to the other, in some cases distinguishing more than one species. Some of these authors are: Fries, Summa Veg. Scand. 211, 212 (1846); Blytt, Norges Fl. **2**: 400, 401 (1874); Hempel & Wilh., Bäume Sträuch. **2**$^{1}$: 18, 24 (1894); Hjelt, Consp. Fl. Fenn. **2**: 1, 6 (1902); Winkler in Engl. & Prantl, Nat. Pflanzenfam. IV. **61**: 75, 81 (1904); Hayek, Fl. Steyerm. **1**: 104, 105 (1908); Hegi, Ill. Fl. Mittel-Eur. **3**: 76, 78 (1909); Henry & Elwes, Trees Gr. Brit. Irel. **4**: 962, 966 (1909); Rouy, Fl. France, **12**: 254 (1910); Lindman, Svensk Fanerog. 201, 202 (1918); Gunnarson, Monog. Skand. Betul. 55, 63 (1925); Komarov, Fl. U. S. S. R. **5**: 291, 295 (1936). In view of the fact that the name *B. alba* has been applied to two different species and that the overwhelming majority of recent authors has abandoned the name altogether as of dubious application, it seems advisable to place *B. alba* L. on the list of *nomina ambigua* and thus bring the procedure of these later authors in conformity with the Rules of Nomenclature.

A. R.

**Quercus rubra** Linnaeus. — This name was based by Linnaeus (Spec. Pl. **2**: 996. 1753) on two different species. The first two syno-

nyms refer to the southern red oak or Spanish oak named by Michaux *Q. falcata,* while the two synonyms enumerated by Linnaeus under β are apparently referable to the northern red oak. Du Roi in 1771 (Obs. Bot. 35) applied *Q. rubra* L. to the northern red oak, a form of which was described as *Quercus ambigua* Michx. f., Hist. Arb. Am. **2**: 120. (1812), not *Q. ambigua* Humb. & Bonpl. (1809) = *Q. borealis* Michx. f., N. Am. Sylv. **1**: 98 (1819). All later authors followed Du Roi in applying *Q. rubra* L. to the northern red oak, until in 1915 C. S. Sargent (in Rhodora, **17**: 39 and **18**: 45) drew attention to the fact that the first two synonyms upon which Linnaeus' description was based, refer to *Q. falcata* Michx. Sargent therefore proposed to restore the name *Q. rubra* L. to the oak generally called *Q. falcata* Michx., and use the name *Q. borealis* Michx. for the common red oak. Unfortunately Michaux' name is based on the more northern form with smaller acorn and deeper cup, while the very widely distributed form with large acorn and shallow cup which represents the form generally understood under *Q. rubra,* will have to be distinguished as *Q. borealis* var. *maxima* (Marsh.) Ashe. For nearly 150 years the name *Q. rubra* has been applied universally to the red oak and is still used in this sense by many authors, while by others, as Sargent, Ashe, Rehder, it is used for the Spanish oak in accordance with its original application, thus causing great confusion in the name of this silviculturally and horticulturally important species widely distributed in its native country and extensively planted in Europe. The name *Q. rubra* should, therefore, be rejected as a *nomen ambiguum* and *Q. falcata* Michx. used for *Q. rubra* L. sensu stricto, while the name *Q. borealis* Michx. f. with its variety *Q. borealis* var. *maxima* (Marsh.) Ashe should be applied to *Q. rubra* Du Roi.

A. R.

**Quercus serrata** Thbg. — The name *Quercus serrata* Thbg., Fl. Jap. 176 (1784) has been applied by subsequent authors up to 1925 to two other species of eastern Asia; only *Q. serrata* Willd. Sp. Pl. **4**[1]: 431 (1805) and Pers. Syn. Pl. **2**: 568 (1807) are referable to the true *Q. serrata,* since they are based solely on Thunberg's description. *Quercus serrata* Thbg. was redescribed by Blume, in Mus. Bot. Lugd.-Bat. **1**: 295 (1850) as *Q. glandulifera,* a name which has been used by all authors up to 1925 for this species. By Siebold & Zuccarini in Abh. Akad. Muench. **4**[3]: 226 (1846) the name has been applied to an oak named later *Q. acutissima* by Carruthers in Jour. Linn. Soc. **6**: 33 (1862). Following Siebold & Zuccarini the name *Q. serrata* was used for this oak by many authors as DC. Prodr. **16**[2]: 50 (1864); Hook. f., Fl. Brit. Ind. **5**: 601 (1888); Skan in Jour. Linn. Soc. **26**: 520 (1899); Shirasawa,

Icon. Ess. For. Jap. **1**: t. 26, fig. 1–12 (1900); Komarov in Act. Hort. Petrop. **22**: 74 (Fl. Mansh. II) (1903); Schneider, Ill. Handb. Laubholzk. **1**: 178 (1904); Nakai in Jour. Coll. Sci. Tokyo, **31**: 208 (Fl. Kor. II) (1911); Rehd. & Wils. in Sargent, Pl. Wils. **3**: 217 (1916); Nakai, Fl. Sylv. Kor. **3**: 22 (1917); Chun, Chinese Econ. Trees, 93 (1922). By Carruthers (l. c.) Thunberg's name was applied to the species described in 1850 as *Q. variabilis* Blume in Mus. Bot. Lugd.-Bat. **1**: 297. He was followed by Schottky in Bot. Jahrb. **47**: 638 (1912); Nakai in Mag. Bot. Tokyo, **29**: 57 (1915) and Fl. Sylv. Kor. **3**: 22 (1917); Koidzumi in Bot. Mag. Tokyo, **30**: 205 (1916). The identity of *Q. serrata* Thbg. with *Q. glandulifera* Bl. was not recognized until Koidzumi saw Thunberg's type in Upsala and published in 1925 a note in Bot. Mag. Tokyo, **39**: 313; his identification was accepted by Nakai, in Bot. Mag. Tokyo, **40**: 165 (1926). The writer when in Upsala in 1928 also examined Thunberg's types which consist of three specimens, branches with pistillate and staminate flowers and fruits, and can confirm Koidzumi's identification. In view of the fact that Thunberg's name had been applied until 1925 to two different species, and that the restoration of the name to another species universally known as *Q. glandulifera* Bl. would cause much confusion in the nomenclature of these widely distributed species, it seems advisable to place *Quercus serrata* on the list of *nomina ambigua* and use for the three species involved the names *Q. glandulifera* Bl. (*Q. serrata* Thbg.), *Q. acutissima* Carruthers and *Q. variabilis* Bl., as has already been done by A. Camus in her monograph "Les Chênes, atlas **1**: 45 (1934); **2**: 19, 20, 127 (1936); text **1**: 571, 572, 581 (1938).

A. R.

**Crataegus coccinea** L. — The name *Crataegus coccinea* was published by Linnaeus in the first edition of Species Plantarum, **1**: 476. 1753, with the following description and notes:

"CRATAEGUS foliis ovatis repando-angulatis, serratis glabris. *Hort. cliff.* 187. *Hort. ups.* 126. *Gron. virg.* 54. *Roy. lugdb.* 272.

Mespilus apii folio, virginiana spinis horrida, fructu amplo coccineo. *Pluk. alm.* 249. 249. *t. 46. f. 4.*

Mespilus spinosa f. Oxycantha virginiana maxima. *Angl. hort.* 49. *t. 13. f. 1.*

*Habitat in* Virginia, Canada.

*Variat cum validis spinis lateralibus & absque spinis.*"

As pointed out by Sargent (in Bot. Gaz. **31**: 12. 1901; Rhodora, **11**: 182. 1909) and by W. W. Eggleston (in Rhodora, **10**: 76. 1908) the first two citations refer to two distinct plants probably belonging to different sections of the genus, neither of which can be identified with certainty;

and the Plukenet specimen preserved in the British Museum is so incomplete as to be unidentifiable; while the plant depicted in the plate in Angl. Hort. 49, t. 13, f. 1 is clearly *Crataegus Phaenopyrum* (L. f.) Medic. Since, according to Sargent, the only specimen named *Crataegus coccinea* by Linnaeus found in the Linnaean Herbarium is a plant from the Upsala Garden of the pubescent form of *Crataegus rotundifolia* Moench, a common species of northeastern North America, and since none of the other plants referred to in the description were identifiable, he suggested that this be taken as the type of the species; and for the glabrous form he proposed the new combination, *Crataegus coccinea* var. *rotundifolia* (Moench) Sarg.

In a further discussion of the subject in Rhodora, l. c., Sargent proposed that the name *Crataegus coccinea* L. should be discarded because of the fact that the description embraced elements altogether incoherent and was a source of permanent confusion and error, and that the name *Crataegus rotundifolia*[1] Moench should be held valid for the glabrous variety of that species, while for the pubescent variety represented in the Linnaean herbarium he proposed the name *Crataegus rotundifolia* var. *pubera*.

Descriptions of *Crataegus coccinea* in the earlier works in which it is mentioned are generally so brief and vague as to be of no value in differentiating it from other allied species, and the plates and figures published throw little additional light on it, as they obviously represent more than one species or in some cases imaginary composites of more than one species. The colored plate in Watson, Dendr. Brit. **1**: t. 62 (1825), apparently represents a species of the Coccineae group, but it can scarcely be identified with any living plant. The plate in Bot. Mag. for 1835, t. 3432, may perhaps represent *Crataegus pedicellata* Sarg., or *C. pedicellata* var. *gloriosa*, but the description goes beyond the limits of that species. A figure of the leaves and fruit in Loudon, Arb. et. Frut. Brit. **2**: f. 564 suggests *Crataegus intricata* J. Lange, but the description on p. 816, of the habit and fruit of the tree is not that of a species of the Intricatae group and is scarcely consistent with any known species.

The treatment in American manuals and floras is equally confused. The description in Torrey & Gray, Fl. N. Am. **1**: 465 (1840) is evidently a composite one, as is further proved by the list of synonyms and citations appended. The description and illustration in Sargent, Silva of N. Am. **4**: 95, t. 180 best represents *Crataegus pedicellata* or a closely related form as later understood by Sargent. In the first edition of

[1]Since *Crataegus rotundifolia* Moench is a later homonym of *C. rotundifolia* Lam., the name is illegitimate and cannot be maintained.

Gray's Manual, 128 (1848), the plant is described as smooth or downy, while in subsequent editions down to the fifth, 1867, it is said to be glabrous throughout. In the sixth edition, 1889, it is described as having the shoots villous-pubescent and the fruit subglobose or obovate ½′ broad. In the seventh edition the genus *Crataegus* was treated by Mr. W. W. Eggleston, and he used the name *Crataegus coccinea* for a shrubby species of the Intricatae group, *C. modesta* Sarg., based upon its supposed identity with the plant from which the figure cited by Linnaeus, Pluk. Alm. 249, t. 46, f. 4. Sargent, however, in Rhodora, l. c., held that this interpretation was based upon a misunderstanding and that the Plukenet plant could not possibly have been *C. modesta*. Eggleston in subsequent publications (in Britton & Brown, Ill. Fl. ed. 2, **2**: 317, f. 2396. 1913; Deam, Trees Indiana, 209, t. 96. 1921; House, Ferns Fl. Plants New York, 245 [N. Y. State Mus. Bull. **254**] 1924) seems to have accepted Sargent's conclusion, and he definitely applied the name *C. coccinea* to *C. pedicellata* Sarg., giving a number of other species as synonyms.

In the first edition of Britton & Brown, Ill. Fl. **2**: 242, f. 1998 (1897), the description and figure may well represent *Crataegus macrosperma* Ashe or some closely related species of the Tenuifoliae group.

The name *Crataegus coccinea* L. appears in nearly all of the local floras and plant lists of the northeastern United States, and many specimens are found in herbaria, but an examination of these shows the utter confusion that has arisen as to the identity of the species. A very large number of species, as distinguished by later authors, have been placed under this name and these include plants of obvious morphological and genetic differences belonging to almost every section of the genus having lobed or incised leaves.

In view of this situation and the apparent impossibility of determining the identity of the plant that should be taken as the Linnaean type of the species, it seems most desirable to abandon the name *Crataegus coccinea* L. altogether and to take up the next available names for the different plants that have been confused with it. *Crataegus pedicellata* Sarg. would thus become the valid name for the species rather widely distributed in northeastern North America that has perhaps most frequently been identified as *C. coccinea,* although there seems to be no positive evidence in the original description or citations for that interpretation. Probably a number of other species can properly be referred to this as synonyms or as varieties. E. J. P.

**Crataegus tomentosa** L. — The name *Crataegus tomentosa* was published by Linnaeus in Sp. Pl. ed. 1, **1**: 476 (1753), with the following description:

"CRATAEGUS foliis cuneiformi-ovatis serratis subangulatis subtus villosis ramis spinosis.

Mespilus inermis, foliis ovato-oblongis serratis, subtus tomentosis. *Gron. virg.* 55.

*Habitat in* Virginia."

The first paragraph does not seem to be consistent with the characters of the species that has generally been accepted as *Crataegus tomentosa* L., which is a small tree or arborescent shrub, widely distributed in the eastern and central parts of North America, with rather ample oblong-ovate leaves pubescent on the under surface, and with unarmed or sparingly armed branches. The last paragraph, so far as it goes, might very well apply to this species, but a serious doubt arises as to this from the fact that the species in question is not known in the Chesapeake Bay region, from which presumably Clayton's plant came, and unfortunately the specimen has not been found, so it seems impossible to resolve the doubt.

W. W. Eggleston pointed out these inconsistencies (in Rhodora, **10**: 78. 1908) and he held that the name *Crataegus tomentosa* should properly be applied to *Crataegus uniflora* Muench. In support of this view he cited the fact that in Sp. Pl. ed. 2, **1**: 682 (1762) Linnaeus adds: "Mespilus virginiana grossulariae foliis *Pluk. phyt.* 100. *f. 1;*" and that Plukenet says of this in his Alm. 249 (1696): "Mespilus virginiana grossulariae foliis, fructu rubro minore. Phytogr. Tab. 100. f. 1. an Oxyacanthus folio parvo subrotundo, flore unico, theca foliacea incluso summitatibus ramulorum insidente Banisteri."

There can be little doubt that the last quotation refers to *Crataegus uniflora* Muench., but the evidence does not seem convincing that this is the plant which Linnaeus intended to describe as *Crataegus tomentosa,* since no specimen of this well-marked species is known that was so named by him. Eggleston seems to have accepted this view in his later publications (in Britton & Brown, Ill. Fl. ed. 2, **2**: 320, f. 2405 (1913); in House, Ferns and Flow. Pl. New York, 418 [N. Y. State Mus. Bull. **254**] 1924), as he restored the name *Crataegus uniflora* Muench. to the shrubby species with usually single or rarely two or three flowers, and took up the name *Crataegus Calpodendron* (Ehrh.) Medic., Gesch. Bot. 83 (1793), for the species usually accepted as *C. tomentosa.*

According to Sargent (in Rhodora, **11**: 182. 1909), who examined the sheet in the Linnaean herbarium labeled *Crataegus tomentosa,* this consists of two specimens collected by Kalm, without locality, one of which is *C. tomentosa* as usually understood, and the other some thick-leaved species of the Tomentosae group.

No such confusion has arisen in the use of the name *Crataegus*

*tomentosa* as is the case with *Crataegus coccinea*, and the former name has long and consistently been applied to a single species by authors and competent collectors. For this reason Sargent maintained that there was no good reason for abandoning the name.

However, since in the absence of a type specimen it seems impossible to determine the identity of the plant to which the name *Crataegus tomentosa* should properly be restricted, and since upon the face of the evidence it seems extremely doubtful that either of the citations in the original description referred to the plant that has so long passed as this species, it seems best that the name should be abandoned and that the next available name, which in this case is clearly *Crataegus Calpodendron* (Ehrh.) Medic., should be used for this plant.

E. J. P.

**Tilia alba** Ait. — The original publication (Hort. Kew. **2**: 230. 1789) states "Native of North America. Cult. 1767 by Mr. James Gordon. Flowers unknown." Henry (in Elwes & Henry, Trees Gt. Brit. Irel. **7**: 1675. 1913) affirms that the type in the British Museum, inscribed *T. alba* in Solander's own handwriting, though bearing neither flower nor fruit, is without doubt a branch of the common European lime, identical with *T. tomentosa* var. *argentea* Henry. Henry's understanding of the specimen that represents the "type" of *T. alba* may or may not be correct. Circumstantial evidence indicates that Gordon, a well known gardener at Mile End, probably cultivated an American "silvery" linden. Gordon was well known (cf. Loudon, Arb. Frut. Brit. **1**: 77. 1854), Ellis writing about him to Linnaeus in flattering terms. The great majority of the species credited as importations of Gordon (cf. Loudon, op. cit. 82; Aiton, Hort. Kew.) are American, with few from the Eastern Mediterranean (e. g. *Salvia cretica*) or from the Atlantic Islands (*Ilex Perado*). It is very unlikely that in 1767 Gordon had material introduced from Hungary or the Balkans. The question is thus raised whether the "type" mentioned by Henry truly represents Gordon's linden. In my opinion there is hardly a chance that it does. Koch (Dendr. **1**: 478. 1869) is justified in stating that the silvery linden originally known in England is the American one, and he rationally accounts for the appearance of *T. tomentosa* in Cassel mentioning the trade that connected southern Germany with Hungary at the time of Moench.

The use of Aiton's binomial has seldom been legitimately restricted to a North American linden. Wangenheim (Beytr. Forstwiss. **3**: 55. 1787) and the editor of Du Roi's second edition (Harbk. Baumz. **3**: 115. 1800) had knowledge of an American "silvery" linden, and the use of *T. alba* made in Du Roi's work, is correct in my opinion, with the excep-

tion of *T. tomentosa* being accepted therein as a synonym of *T. alba*. The great majority of botanists, however, have confused *T. alba* Ait. with *T. alba* Waldst. & Kit. = *T. tomentosa* Moench. The second edition of the Hortus Kewensis subscribes to this confusion; it adopts the understanding of *Tilia alba* as of Willdenow (Sp. Pl. **2**: 1162. 1799), Martyn (in Miller's Dict., 1803), Borkhausen (Handb. Forstbot. **2**: 1223. 1803), Desfontaines (Hist. Arb. Arbriss. France, **2**: 42. 1809), Ventenat (Monog. Gen. Tilleul, 12. 1802). Steven (in Bull. Soc. Nat. Mosc. **4**: 262. 1832) appears to have been aware that *T. alba* Waldst. & Kit. and *T. alba* Ait. are different species. Michaux reinstated *T. alba* (Hist. Arb. Am. Sept. 3, 1813), reducing *T. heterophylla* Vent. to synonymy, for which he was censored by Nuttall (N. Am. Sylva, **1**: 91. 1842).

A critical revision of the literature establishes: a) *T. alba* Ait. is an American linden; b) *T. alba* Waldst. & Kit. is an Hungarian linden; c) the type, technically speaking, is a sterile branch that may or may not represent *T. tomentosa* of our understanding; if it is this species, which Henry claims, there is contradiction between the letter of the publication and the geographic origin of the type; d) *T. alba* under various authorships, and with much attending confusion of synonymy has been used by Willdenow, Borkhausen, Martyn, Desfontaines, Ventenat, Nuttall, etc. for the European *T. tomentosa;* e) *T. alba* has been understood as an American linden by the editor of Du Roi, Michaux the elder, Steven, K. Koch.

In consideration of the uncertainty attaching to the type and of the indifferent use of the binomial, it seems best to reject altogether *T. alba* Ait. accepting in its stead: *T. tomentosa* Moench, *T. heterophylla* Vent., and *T. neglecta* Spach which can be attributed to species of reliable typification, and are well established in taxonomic and horticultural usage.

L. C.

ARNOLD ARBORETUM,
HARVARD UNIVERSITY.